

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

1st
QUARTER

2nd
QUARTER

3rd
QUARTER

4th
QUARTER



ing climbs into line
which rising consumption.
define rebuilding of in-
ventories starts.

High consumption and
inventory rebuilding
pushes rate to 95%.
Dip starts in June.

Seasonal lethargy develops.
Steel buying lags behind
consumption. Low point:
Mid-August at 75%.

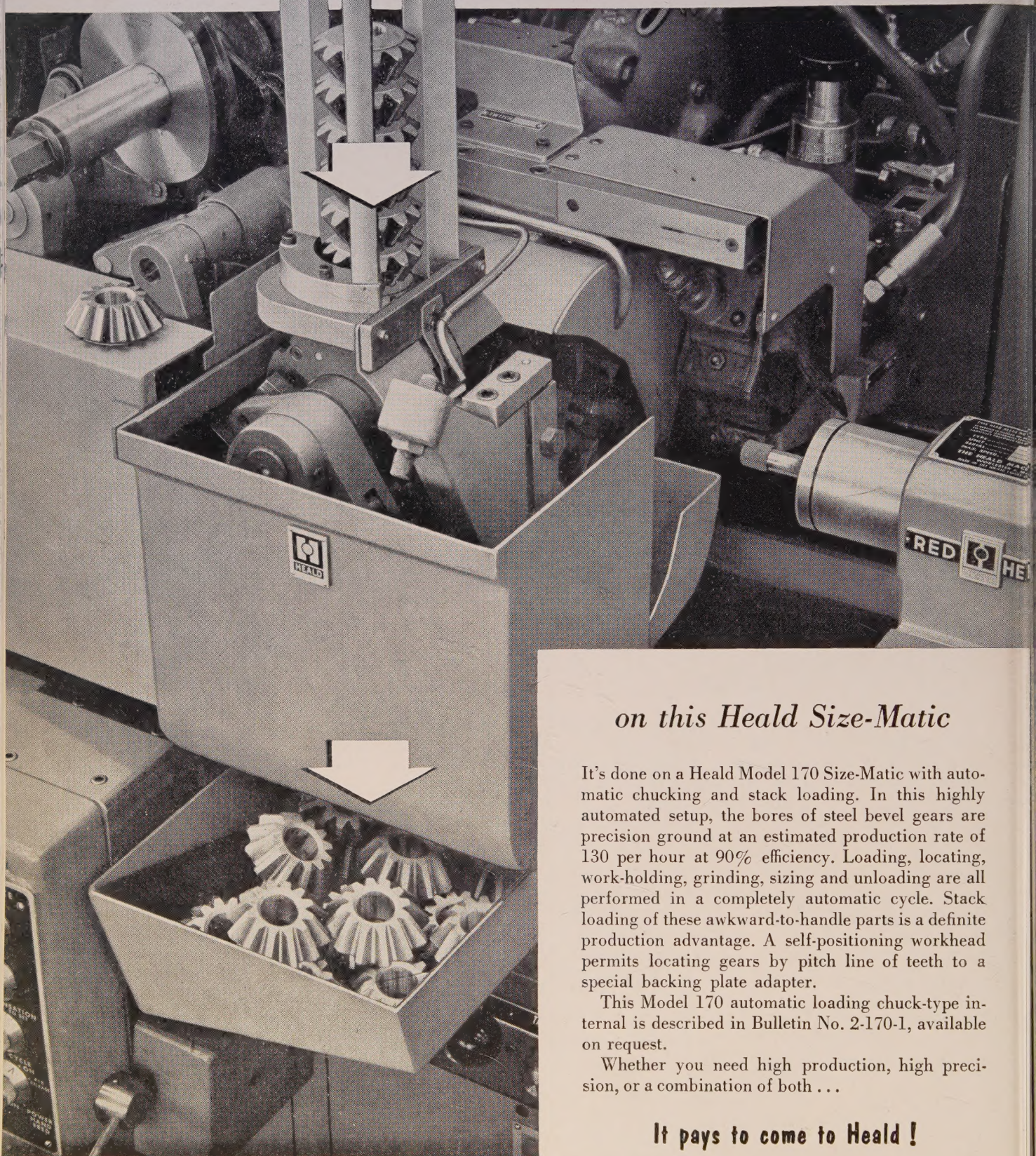
New model autos spark
upturn. Steel consumption
and output in balance.
Peak output: 85%.

STEEL PRODUCTION: Trend Line for the Future, page 121

✓ Trouble in Titanium, page 37

✓ Stronger Cold-Expanded Pipe, page 86

stack loading + auto-chucking
= 130 PARTS/HR



on this Heald Size-Matic

It's done on a Heald Model 170 Size-Matic with automatic chucking and stack loading. In this highly automated setup, the bores of steel bevel gears are precision ground at an estimated production rate of 130 per hour at 90% efficiency. Loading, locating, work-holding, grinding, sizing and unloading are all performed in a completely automatic cycle. Stack loading of these awkward-to-handle parts is a definite production advantage. A self-positioning workhead permits locating gears by pitch line of teeth to a special backing plate adapter.

This Model 170 automatic loading chuck-type internal is described in Bulletin No. 2-170-1, available on request.

Whether you need high production, high precision, or a combination of both ...

It pays to come to Heald !



THE HEALD MACHINE COMPANY

WORCESTER 6, MASSACHUSETTS

Offices in Chicago • Cleveland • Dayton
Detroit • Indianapolis • New York

Mayari R makes it lighter...stronger...longer lasting



The 7 reasons why they chose Mayari R

This is an expansion dam for a highway bridge. Connecting the abutment with the bridge roadway, it allows longitudinal movement of the spans as they expand or contract with the temperature. Structural and operational factors required the steel for this device to possess an unusual combination of qualities.

Naturally, Mayari R's superior strength was important, but that was only one reason why they chose this versatile steel. The constant wear and pounding of traffic called for stout resistance to abrasion and impact, characteristics in which Mayari R handily excels plain carbon steels.

Those inter-meshing fingers were formed by flame-cutting, and some of them had to be drilled for bolt holes. Shop men found Mayari R's workability right up to par on these operations.

In addition, Mayari R proved readily weldable. The photo-

graph shows the anchor straps as they are being welded in position, using ordinary welding equipment and methods.

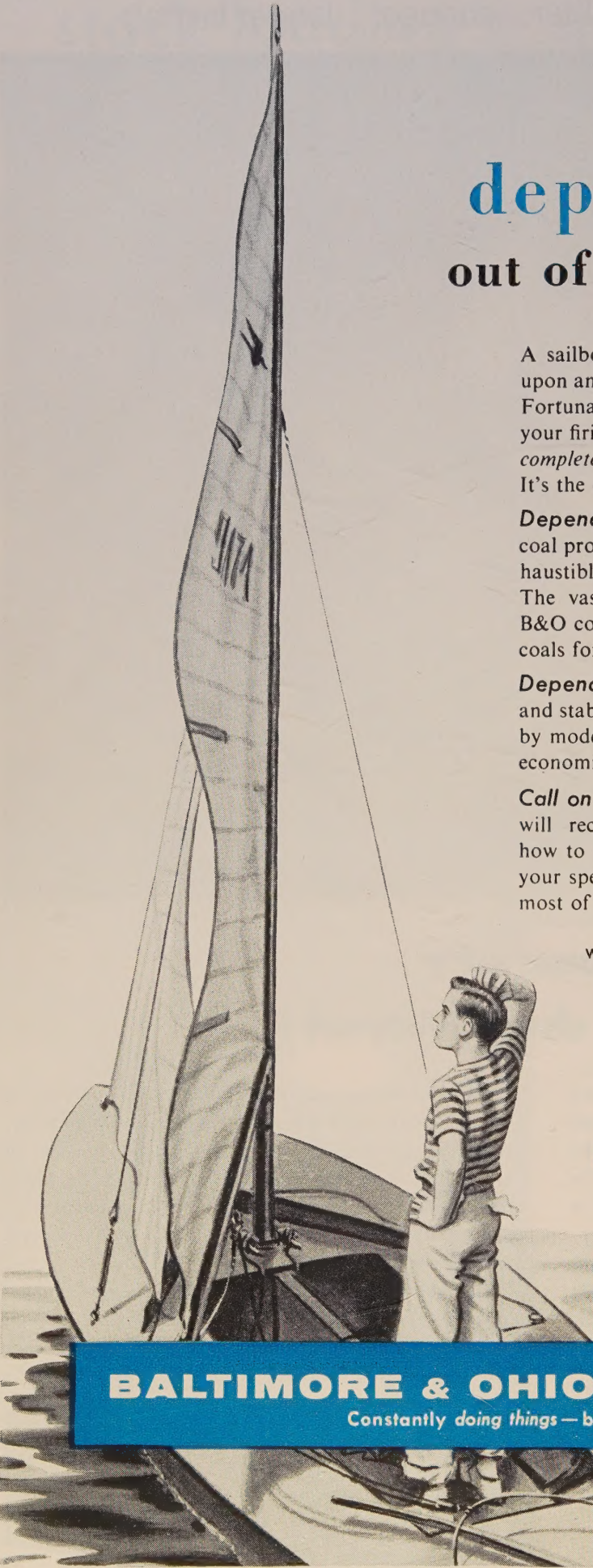
With the dam in place, the underside would be virtually inaccessible, thus making maintenance painting extremely difficult. But since Mayari R has far superior resistance to atmospheric corrosion, maintenance painting at this point becomes relatively unimportant.

All of these seven Mayari R benefits, plus others unmentioned here, are fully discussed and illustrated in Catalog 353. A few minutes spent among its pages may help unlock some problem you are facing right now. Why not ask the nearest Bethlehem office for a copy?

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation



A detailed illustration of a sailboat on the water. A man in a striped shirt and light-colored trousers stands on the deck, looking up at the mast. The sail is large and has some markings on it. The background is a simple horizon line.

Never leave **dependability** out of your fuel picture

A sailboat has no choice—it must depend upon an undependable wind for locomotion. Fortunately, you have a choice in fuels for your firing system. Select the fuel known for *complete* dependability—Bituminous coal! It's the one fuel which gives you:

Dependability of Supply—Bituminous coal provides, for centuries to come, an inexhaustible source of low-cost heat and energy. The vast Bituminous fields served by the B&O contain a great variety of outstanding coals for every purpose.

Dependability of Cost—Cost is kept low and stable thanks to the advancements made by modern mechanized mining. And coal is economical and safe to store.

Call on our Coal Technical Service! You will receive authoritative information on how to select the right Bituminous coal for your specific firing job . . . how to make the most of your fuel dollar. *Ask our man!*

Write: COAL TRAFFIC DEPARTMENT

BALTIMORE & OHIO RAILROAD

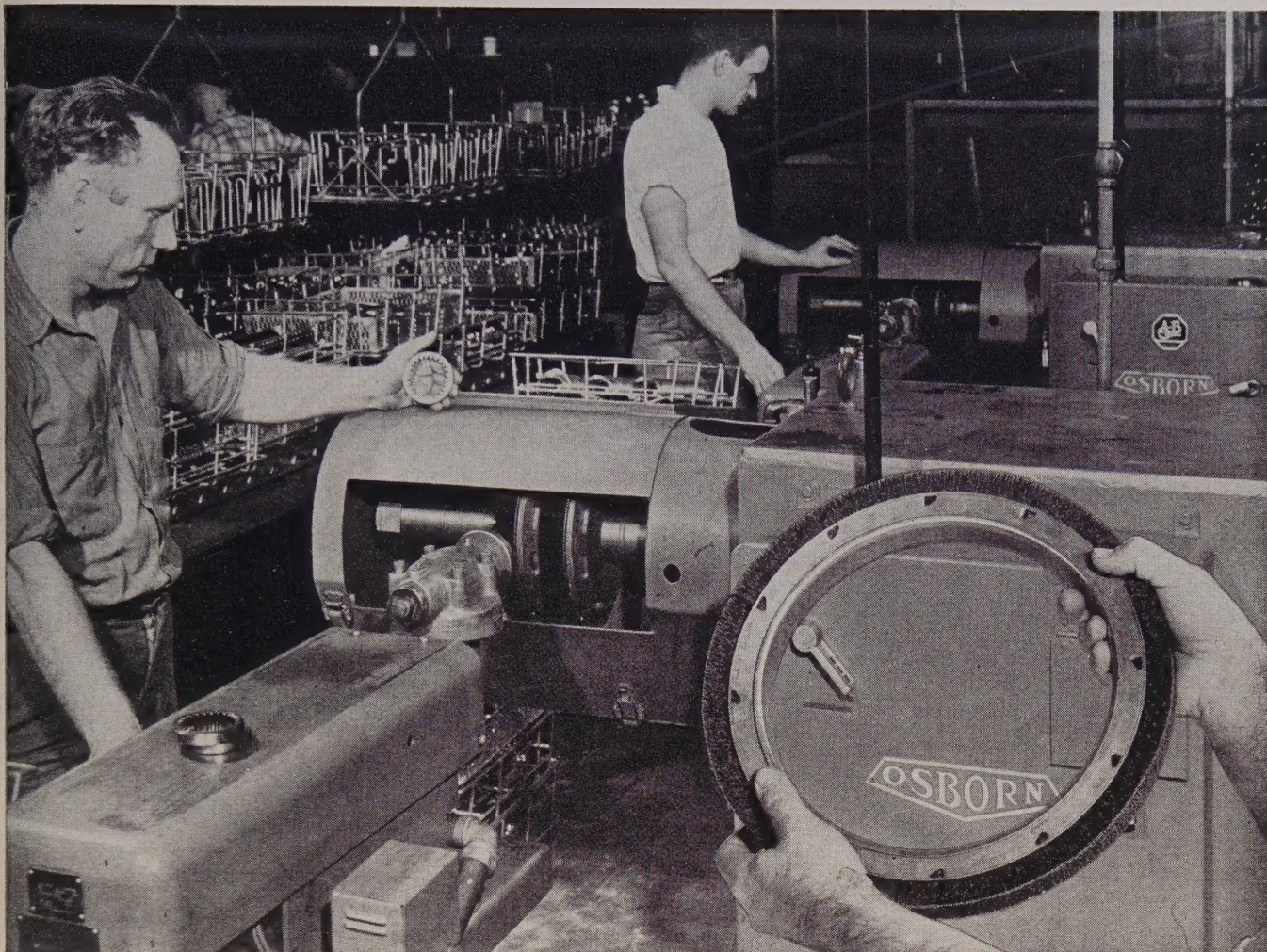
BALTIMORE 1, MARYLAND

**BITUMINOUS
COALS FOR
EVERY PURPOSE**

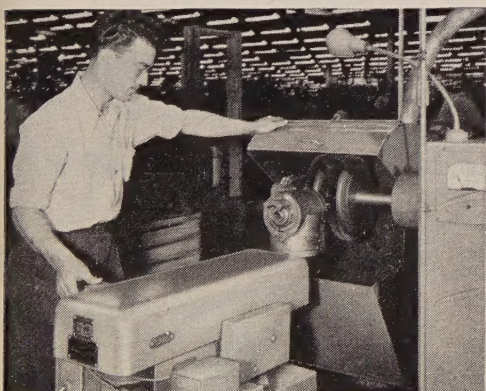
BALTIMORE & OHIO RAILROAD

Constantly doing things — better!





WHERE PRECISION COUNTS... duplicate quality with Osborn Brushamatics



SAVES 1000 MANHOURS. Replacing hand methods, this Osborn Brushmatic finishes 17 different kinds of gears . . . saves more than 1000 manhours every year. An OBA will show where you can save manhours.

* Trade-Mark

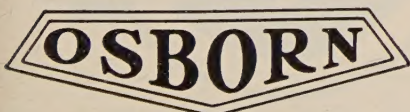
Have an OBA solve your finishing problems

The Job . . . remove burrs and blend surface junctures on precision automotive components. Production tolerances call for micro-finish to meet rigid standards of modern quality cars.

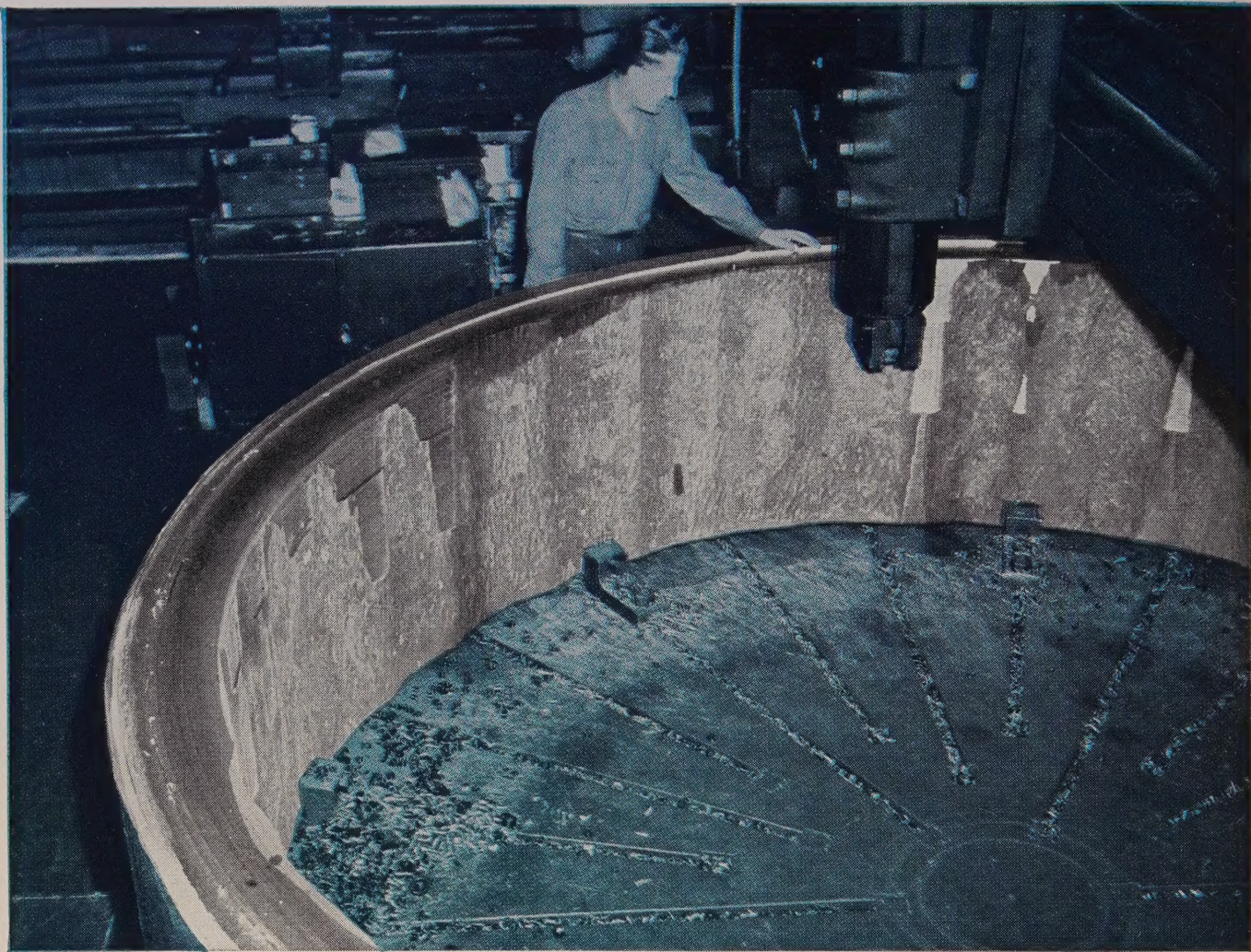
The Method . . . parts are gripped in simple holding devices of an Osborn Brushmatic* and rotated against revolving brushes. Operator has only to load and unload parts. The machine does the rest . . . automatically on a preset time cycle . . . over 2000 parts a day.

For better quality of product, for lower-cost production, have an **Osborn Brushing Analysis** made of your operations. See how much push-button brushing can really save for you. *The Osborn Manufacturing Company, Dept. G-30, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

Osborn Brushes



BRUSHING METHODS • POWER, PAINT AND MAINTENANCE BRUSHES
BRUSHING MACHINES • FOUNDRY MOLDING MACHINES



MIDVALE "PUTS TEETH" IN MARINE DRIVE

This 159½" I. D. gear tire for the reduction gear in a high speed marine drive is receiving the rough machining at Midvale. From pour to machining it has been built for toughness . . . higher resistance to wear.

Toughness of forgings at Midvale is achieved by using only the finest part of the ingot originally poured. Experienced forgers shape it up for rugged service using a 6,500 ton hydraulic forging press. Heat treating cycles based on Midvale's long experience are thoroughly followed to produce the maximum in mechanical properties.

Final machining is done on equipment capable of handling rough or finish machining on practically any size product.

At Midvale the final gear tire represents only a fraction of the original ingot—73,500 pound ingot was required to make this gear tire which was 15,640 pounds in the rough machined state when shipped. This is one of the reasons Midvale gear tires . . . rings . . . roll shells are noted for their long life. Why Midvale forgings, whether 300 or 300,000 pounds are tough for extra service life and never failing performance. For forgings that last see Midvale first.

THE MIDVALE COMPANY-Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE



FORGINGS, ROLLS, RINGS, CORROSION AND HEAT RESISTING CASTINGS

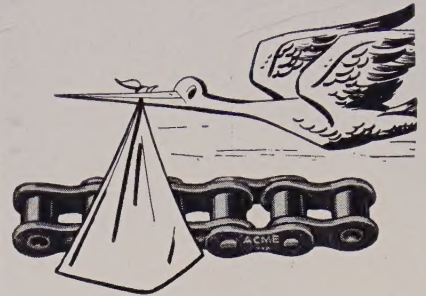
✓ NEWS ✓ PRODUCTION-ENGINEERING ✓ MARKETS

✓ Metalworking Outlook	31
The Editor's Views	35
Nonferrous Casters Expect 15-Per-Cent Improvement	40
Homebuilding and autos sustain high-level production	
Cut Your Costs for Order-Invoice Processing	42
Delta Power Tool Div., Rockwell Mfg. Co., reduces nine operations to three with electronic machinery	
Windows of Washington	44
Trends in Foreign Investment	47
U.S. manufacturers' interests are increasing. Since 1950, more than \$1.5 billion has been added to investment	
New Bounce: Industrial Rubber Goods	48
Sales will be over \$600 million in 1955	
Consumer Buying: High Again This Year	49
Public is optimistic about business prospects	
Mirrors of Motordom	51
The Business Trend	55
Men of Industry	59
✓ Technical Outlook	77
X-Ray Inspection: Guarantee of Quality	78
In the boiler industry, where structural soundness is a must, this nondestructive testing technique is essential	
Automation Molds a Foundry Line	80
Cyclic molding-casting-shakeout lines in this foundry come close to no-hands operation	
Turning Paint Into Profits	82
GE is getting almost twice as many units per gallon of finish with its new continuous finishing lines	
Stronger Cold Expanded Pipe	86
It may look the same and carry the same analysis, but it will take 15 to 20 per cent more pressure	
Titanium Gets Ready for the Future	102
Furnaces will double-vacuum melt 2000-lb ingots starting with consumable electrodes of compressed sponge	
New Products and Equipment	109
✓ The Market Outlook	121
Metal Prices and Composites begin on Page 122	
Nonferrous Metals	124
Behind the Scenes	6
Letters to the Editors	10
Calendar of Meetings	25
Obituaries	62
Helpful Literature	119

Editorial, Business Staffs—16. Advertising Index—151. Editorial Index available semiannually. STEEL is also indexed by Engineering Index Inc., 29 West 39th St., New York 18.

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ACME CHAIN



QUICK DELIVERY

The ACME organization was built to give prompt or immediate service. The flexibility of our equipment, the crew of skilled mechanics, our large inventory of standard sizes of ACME Chains, and good shipping facilities, all go to give you ACME Chains when you want them—where you want them.

By 'quick delivery' we mean shipment the same day your order is received. Delivery on 'special orders' is made a week or two sooner than you would normally expect.

Incidentally:

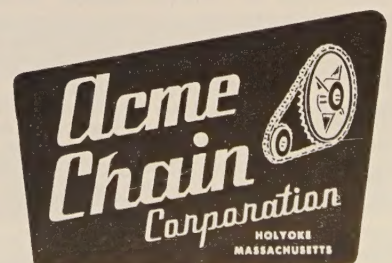
Special assistance from ACME Engineers is ever available to you. At no obligation, our chain experts will gladly cooperate with your designers on your projects.

WRITE OR PHONE Jefferson 2-9458



Write

Dept. 10-S for new illustrated 76 page catalog on use and application of roller chains and sprockets.



QUANTITY
PRODUCTION
OF
GREY IRON
CASTINGS

ONE OF THE
NATION'S LARGEST
AND MOST MODERN
PRODUCTION
FOUNDRIES

ESTABLISHED 1866
**THE WHELAND
COMPANY**
CHATTANOOGA 2, TENN.

For stress, wear
or vibration a

GRIPCO LOCK NUT



will hold
tighter, wear longer,
cost less!

The Gripco Lock Nut, with its simple, one-piece design, has given industry a tighter, more positive holding action for quicker fastener application at less initial cost. It provides frictional resistance to vibration and loosening torque—is faster to use—permits repeated removal and reapplication—simplifies production—lowers manufacturing and maintenance costs—has improved the durability of hundreds of products—and has insured greater customer satisfaction. If stress, wear or vibration is your problem, specify Gripco Lock Nuts for greater holding power. Impervious to oil or water. Write for samples and full details.

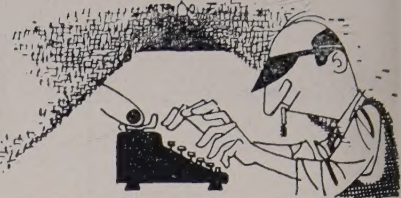
GRIPCO PRODUCTS INCLUDE:

Gripco Lock Nuts, New Gripco "Clinch" Nuts, Gripco Hi-Nuts, Gripco Pilot-Projection and Countersunk Weld Nuts with or without Gripco locking feature.

GRIPCO COMPANY
NUT

"after 50 years still holding strong"
108-N S. MICHIGAN AVE., CHICAGO 4, ILL.

behind the scenes



Fisher Bait's Pal

Calvin Fisher Jr., STEEL's New England advertising representative, has devoted much time and effort toward the spreading of product information. In step with the scientific advances that have shaken a complacent world, space salesmen have advanced to the role of sales doctor. The man who sells space in STEEL is a psychiatrist, a confessor, a market analyst, a trusted adviser and an instrument of profit. Fisher goes further: He triumphantly weathered a problem involving matrimonial etiquette.

Dave Cole of *Electrical Manufacturing* looked at his watch one day and was greatly concerned to be reminded that it was his 11th wedding anniversary. He knew he was morally obliged to buy something nifty and appropriate for his wife, but, like most of us in these delicate matters, he was up a stump. He conferred with Calvin. After they investigated anniversary associations and customs, Calvin came up with the answer.

"The 11th wedding anniversary," remarked Mr. Fisher, quoting from *Webster's Superior Dictionary for Home, School and Office*, is properly observed with steel. Therefore, I suggest that you give your wife a good book." And he handed Mr. Cole a fresh copy of STEEL.

Bell Story Rings Gong

Every so often STEEL titillates its readers by going off the deep end. This week Assistant Managing Editor Vance Bell blithely dons his conical astrological hat and tells us all about steel production and consumption for the remainder of the year. We're a long way from June, but that doesn't daunt Vance; he considers all the pertinent ponderables, and reveals that although high consumption and inventory rebuilding will push the steel production rate up to 95 per cent, a dip will start in June. Just like that. When Vance crawls out on a limb he doesn't fool around; he goes ALL the way. We think this daring dip into prophecy will stir your admiration. While many ideas expressed in his article are really a compendium

of many thoughts, we would like to have your views on the subject, too. Read it over—mull it over—and then let fly with the flowers or brickbats. Publishing can be beautiful when everything is rosy. That's when it can be dreadfully dull, too.

Huber Bounds Over West

Bob Huber, STEEL's machine tool editor, is in Los Angeles this week covering the West Coast Metal Show, opening today. Two weeks ago he covered the American Society of Tool Engineers Show in the city of the angels. Since he is operating at top capacity, it is believed back here that the agility and endurance he has developed through conquering traffic and smog will stand him in good stead during the rest of his trip. Rapid Robert will seek out and develop STEEL articles in San Francisco and San Diego, Calif., Portland, Oreg., and Seattle.

Fresh Awards?

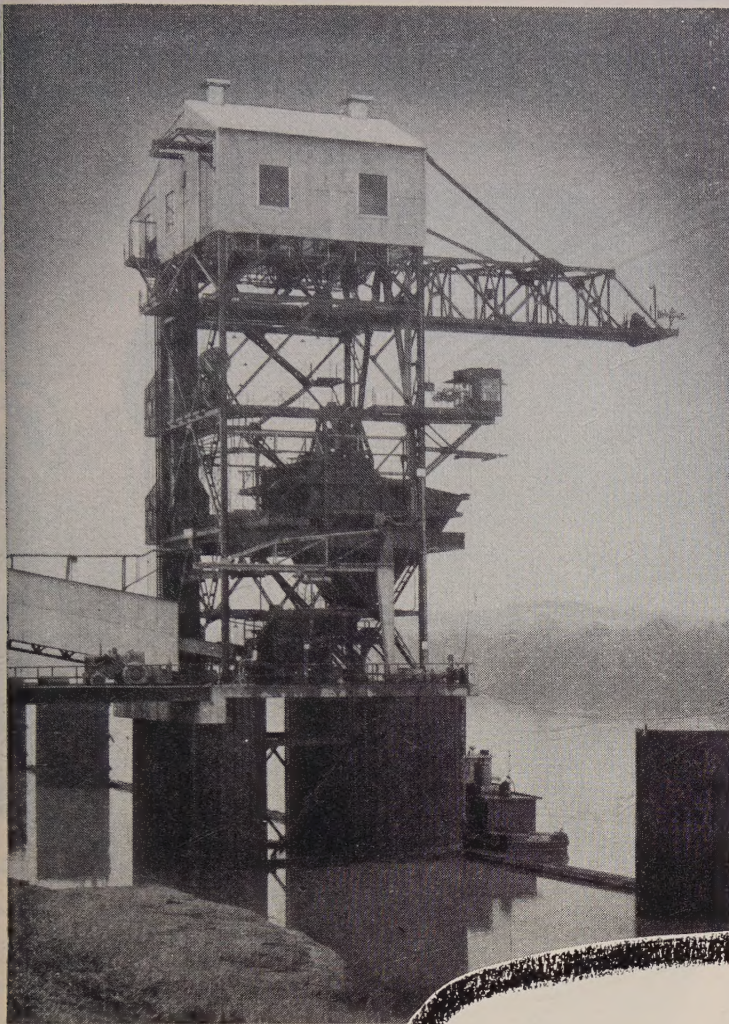
The 1954 Program for Management series is being entered in the *Industrial Marketing* contest. The 1953 series won the top award bronze plaque now reposing in the editorial conference room. Other entries this year: Steel Buyers Guide, The Leasing Series, The Leaded Steel article and four front covers which feature Dave MacDonald, president of the United Steelworkers; Clarence Randall, chairman of Inland Steel; Clyde Williams, president of Battelle Memorial Institute; and Jim Nance, president of American Motors.

Tree Planting Time

After a lapse of many months, and in reply to many demands, we are going to print puzzles again. Just for a start, and because we're near the end of the page, here's a real oldie: The farmer had ten trees. He wanted to plant them in five straight rows, but his wife insisted on four trees in each row. To keep peace in the family, the resourceful agriculturist planted his ten trees in five straight rows, four trees to a row. How?

Shrullu

(Metalworking Outlook—Page 31)



a *Heyl & Patterson*
contribution to
Improved Efficiency
in the Modern World
of Coal Handling

**1100 Ton Per Hour
Capacity
Coal Barge
Unloaders**

THE PICTURE SHOWS . . . A New Coal Barge Un-
loader at The Kyger Creek Power Plant of The Ohio
Valley Electric Corporation.

It was Designed, Built and Erected by Heyl & Patterson. It removes coal from river barges to a 200-Ton Capacity Receiving Hopper built integrally in the Unloader. The coal flows from the hopper by gravity to a 54" Belt Feeder, then to a 48" Belt Conveyor which delivers it to the Power Plant Bunkers. Every Sales Representative of the Heyl & Patterson Staff is an experienced engineer. Their services are available to you without obligation.

Ore & Coal Bridges
Railroad Car Dumpers }
High Lift-Turnover-Rotary }
Coal & Coke Preparation Systems
Boat Loaders & Unloaders
Cyclone Thickeners
Reineveld Centrifugal Dryers
Pig Casting Machines
Bradford Coal Breakers
Sintering Plants

Heyl + Patterson, Inc.
"SINCE 1887"

55 FORT PITT BLVD. PITTSBURGH 22, PA.

POURING "PRODUCTION"

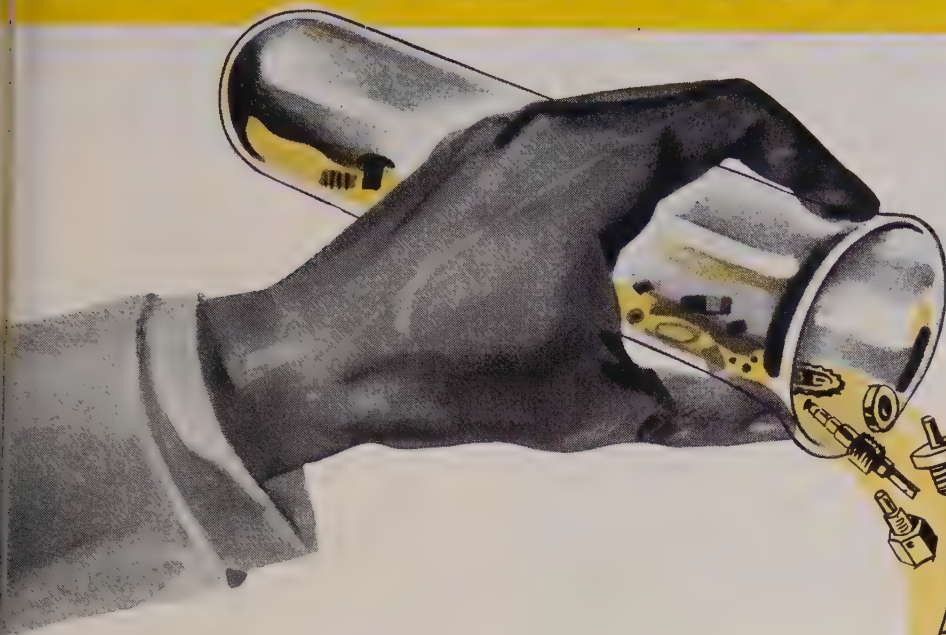


THE **Stuart** TRIANGLE

Represents the pooling of experience
and technical information from
Stuart's laboratory, field
men, and product users
regarding the selec-
tion of the right
cutting fluid
to do the
best
job!

More than
a "Coolant"
is needed.

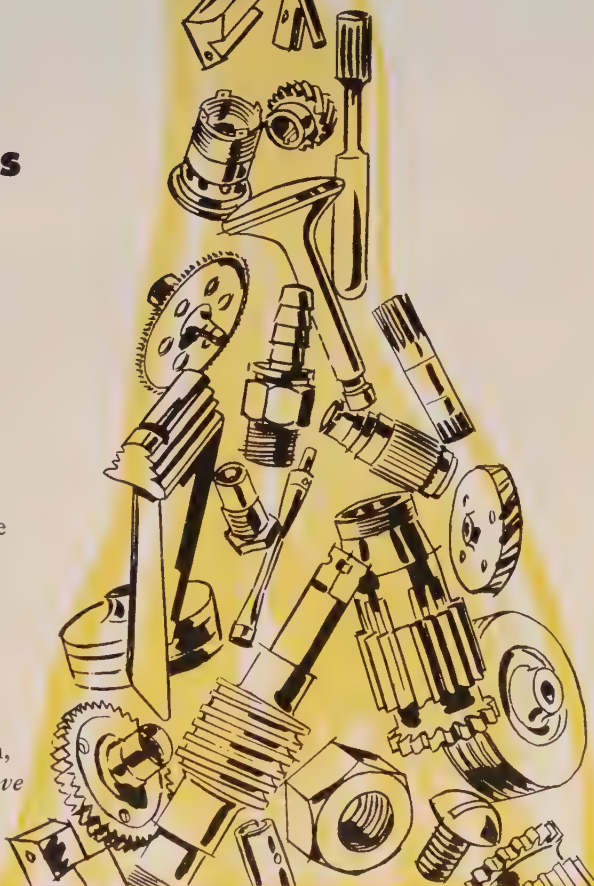
OUT OF TEST TUBES



Stuart's Laboratory can solve your Industrial Lubrication Problems

The Stuart Laboratory, one of the finest in the country, is devoted exclusively to research on industrial lubrication problems. Here, experienced technicians are constantly at work developing new products and improving established ones. Stuart customers are assured the best possible results . . . *greater production, improved surface finishes, longer tool life, longer service life for machine tool bearings and ways.*

Stuart Industrial Lubricants include straight oil type cutting and grinding fluids, water-mix cutting and grinding fluids, drawing and stamping compounds and lubricating oils and greases for gears, bearings and machine tool ways. The next time you have an industrial lubrication problem, contact "The Man in the Barrel", the Stuart Representative. With almost 90 years of specialized company experience behind him, he's your best guide to the *right* oil for your job, and will *save* you time, money and material. Fill in the coupon below today!



D. A. Stuart Oil Co.
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TIME-TESTED CUTTING FLUIDS AND LUBRICANTS

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In Canada: Canadian D. A. Stuart Oil Co., Ltd.

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CLIP TO YOUR COMPANY LETTERHEAD AND MAIL TO

D. A. Stuart Oil Company
2735-37 S. Troy Street, Chicago 23, Illinois

- ☐ Please have Stuart Representative call.
☐ Please send a copy of the booklet titled Stuart's Water-Mix Cutting & Grinding Fluids.

Name

Title

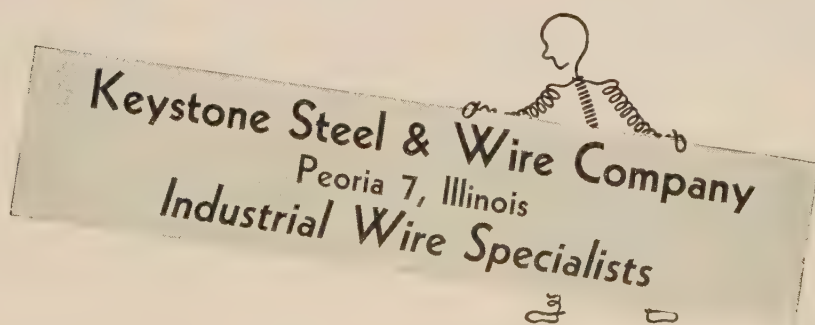




Licensed manufacturers of recessed head screws who have specified "Special Processed" wire for their difficult cold heading jobs find that it more than pays for itself by: (1) increasing the production rate which *lowers the cost per unit*; (2) greatly prolong die life which *reduces machine down-time and labor costs*; (3) providing a higher quality finished product which *minimizes rejections and inspections*.

The excellent flow properties of this superior cold heading wire, together with its structural soundness, enables you to gain greater efficiency from start to finish on the more intricate and precise cold heading parts in your production schedule.

For further information, see your Keystone representative or write direct.



LETTERS TO THE EDITORS

Bicycle Imports Threaten



We are interested in your editorial "Free Trade Vs. Protectionism" (Feb. 28, p. 53). It is a pleasure to find an editor who takes a realistic view of this problem. Unfortunately, most editorial writers and editors take the complete free trade view to the detriment of American labor and industry.

To show what happens when American industry's tariff protection is taken away, look at the inroads made by cheap, foreign bicycle imports since 1933. One more year at the rate of the past five years and the steel industry will not be selling steel for bicycles unless we get some protection.

H. W. Snyder
president
H. P. Snyder Mfg. Co. Inc.
Little Falls, N. Y.

• Exploring this situation is "Bike Makers Roll Easier with Push from Steel Producers" (Apr. 6, 1953, p. 70). Another article is forthcoming Apr. 18.—ED.

Credit Men Approve

May we have permission to use part of your fine article "Help Cure Problem Accounts" (Feb. 21, p. 52) in our magazine?

Al Potter
executive manager
Chicago Association of Credit Men
Chicago

• Permission granted.—ED.

Helpful in Classroom

Would you kindly send me four complete sets of the four articles "Burdening the Blast Furnace" (Feb. 7, p. 116; Feb. 14, p. 92; Feb. 21, p. 82; Feb. 28, p. 96)? These should be helpful in classroom instruction.

J. Alfred Berger
School of Mines
University of Pittsburgh
Pittsburgh

Will you please send one set of the four articles?

A. F. Peterson
vice president
Bethlehem Steel Co.
Bethlehem, Pa.

May we please have two copies each of the four installments?

Walter B. Farnsworth
director of research
Pittsburgh Steel Co.
Monessen, Pa.

• Sent. ED.

(Please turn to page 12)

WHAT IS IT?



An off-shore oil tank coated with **INSUL-MASTIC!**

Thirteen miles off the shore of Corpus Christi stands this oil storage tank. An island on legs receiving oil from eight off-shore drilling rigs. The water is shallow, the heat and humidity are terrific. Evaporation is rapid and the atmosphere is among the saltiest and most corrosive on earth. That is why the sides and bottom of the island tank are coated with INSUL-MASTIC.

INSUL-MASTIC coatings are made only in the **INSUL-MASTIC** laboratories from a number of raw materials, each carefully selected for a particular function or quality. Among these are asphalt and Gilsonite.

INSUL-MASTIC's heavy, reinforced asphaltic coatings also prevent corrosion in steel mills, paper pulp mills, chemical plants and other industries where the corrosive atmosphere is extremely severe. Claims and appearances can be duplicated, but INSUL-MASTIC's record for maintenance-free protection shows jobs 12, 15 and 20 years old . . . and that record cannot be duplicated.

To prevent corrosion in your plant, specify the protective coating which has stood the test of time. Specify INSUL-MASTIC and free yourself of corrosion and maintenance.

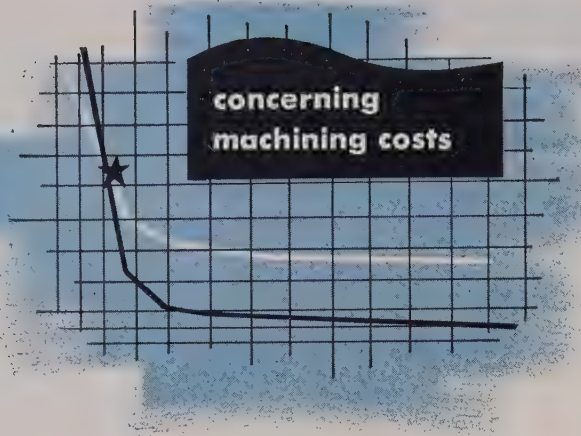
Insul-Mastic



*Think first of the
coatings that last!*

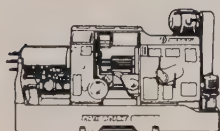
Representatives in Principal Cities

CORPORATION OF AMERICA • OLIVER BUILDING, PITTSBURGH 22, PA.

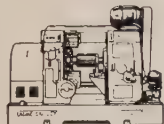


let the job **BREAK-EVEN POINT** determine the economics

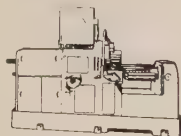
...and the machine



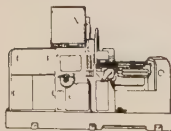
BAR AUTOMATICS
4 Spindle — 7 sizes; 1 to 7 3/4"
6 Spindle — 9 sizes; 1/8 to 6"
8 Spindle — 6 sizes; 1/8 to 4"



CHUCKING AUTOMATICS
4 Spindle — 2 sizes; 10 to 12"
6 Spindle — 4 sizes; 5 1/4 to 12"
8 Spindle — 2 sizes; 6 and 8"



TURRET LATHES
(Bar-Type — Fully Automatic)
Single Spindle — 3 sizes; 3 1/2 to 5 1/2"



TURRET LATHES
(Chuck-Type — Fully Automatic)
Single Spindle — to 12" cap.



CHUCKING AUTOMATIC
Single Spindle ("Chuckmatic")
To 12" capacity

In machining duplicate parts calling for long or short runs . . . small and intricate parts requiring extreme accuracy . . . or when making heavy cuts that call for plenty of "beef" in the machine, let the job break-even point dictate the economics.

A careful analysis of all job factors—the number of pieces, number and kind of finishing cuts, the set-up time—will show how to do the job most economically.

Then, if the job analysis shows you need a multiple or single-spindle bar or chuck-type automatic to get the lowest per piece cost, you will find that National Acme can provide the **RIGHT** machine for the job.

A broad background of experience gained in the design and manufacture of the world's only complete line of multiple-spindle bar and chucking automatics and fully automatic turret lathes, gives National Acme a versatility throughout its sales, engineering and service departments, not to be found in less comprehensive lines of machines.

National Acme thus can provide not only the **RIGHT MACHINE**, but *experienced tooling advice as well*. It's an unbeatable combination for profits.

Why not talk it over with a National Acme representative soon?

**THE NATIONAL
ACME COMPANY**

189 East 131st Street, Cleveland 8, Ohio

LETTERS

(Concluded from page 10)

Information Please



The article "Metalworking Moves In-to Southeast" (Feb. 28, p. 65) reveals that numerous companies have established plants in the Southeast recently. May I have the locations of these plants?

Bert Lewyn
manufacturers representative
Atlanta, Ga.

• An up-to-date listing of new plant locations is difficult to supply from Cleveland. Being forwarded are locations of the plants we know about, plus sources for further information.—ED.

Sharing of Profits

Please send a copy of the article "Prof't Sharing Gets Results" (Feb. 28, p. 58). Can you give me the address of the Council of Profit Sharing Industries?

Stanley Potochnik
2621 N. Ninth St.
Sheboygan, Wis.

• It's the Council of Profit Sharing Industries, 337 W. Madison St., Chicago 6, Ill.—ED.

Story Tells All

Your article "Copper, Brass Mills Woo Aluminum" (Feb. 28, p. 55) gives a comprehensive presentation of a difficult subject, and we are happy to have had a small part in its preparation. May we have 75 reprints to distribute to our salesmen?

H. A. Harty
advertising manager
Wolverine Tube
Division of Calumet & Hecla Inc.
Detroit

• Sent.—ED.

GAW Clearly Stated

Please send three copies of your article "What Price Annual Wage?" (Mar. 7, p. 59). This is the most concise, clear-cut statement of GAW I have seen.

Wm. F. Marsteller Jr.
advertising manager
Owen Bucket Co.
Cleveland

• Sent.—ED.

Sharp Edges Protected

In the Technical Outlook column (Feb. 28, p. 87), you mention a new vinyl coating good in corrosion protection of sharp edges. Please advise us where further information may be obtained.

J. B. Sullivan
maintenance engineer
National Carbon Co.
Fosterla, O.

• Write: Amercoat Corp., 4809 Firestone Blvd., South Gate, Calif.—ED.



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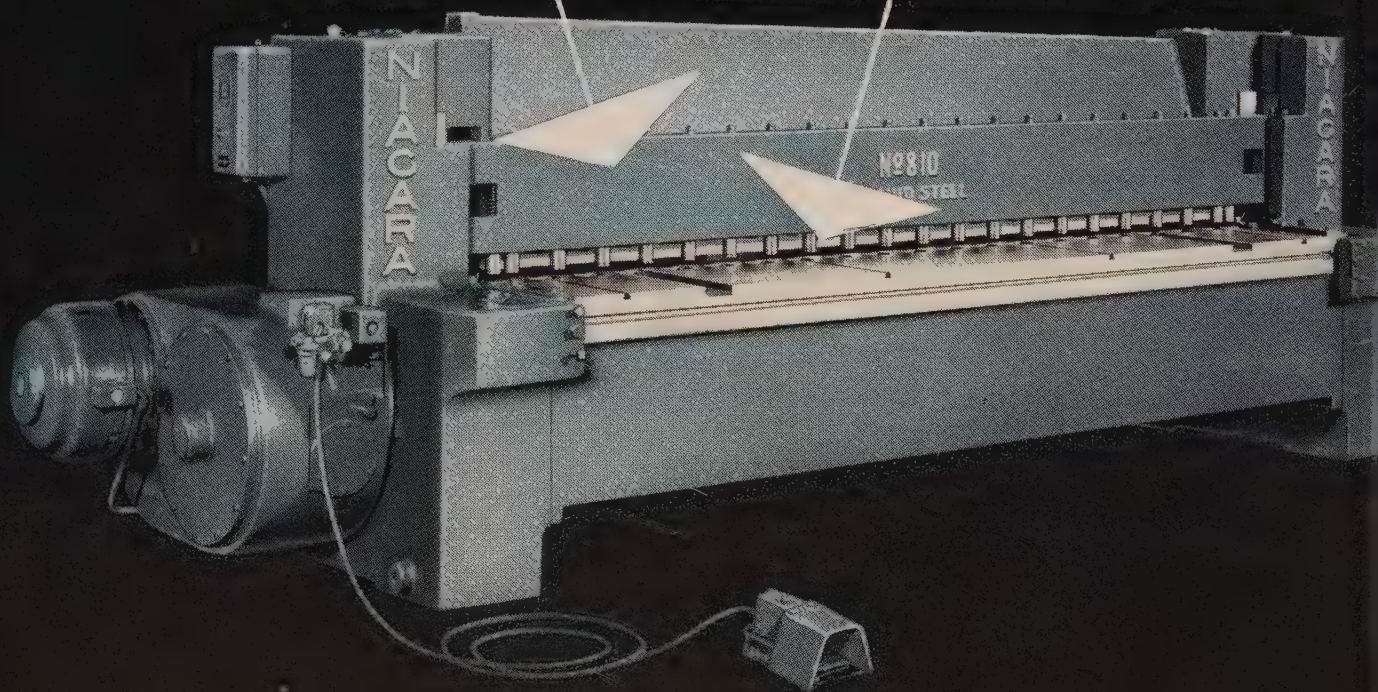
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Positive, power actuation grips work securely for maximum cutting accuracy.

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Individual pressure feet contact work with low impact, thus safeguarding both the material and bed against damage, as well as reducing noise level. No hammer-blows to mar work. No peening of bed with resulting distortion of knife seat.

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Simplicity of design and construction, involving a minimum number of parts, assures negligible servicing. With less to go wrong, there is less to repair and replace.

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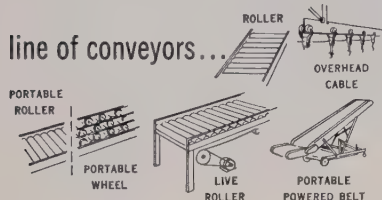
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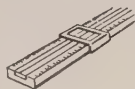


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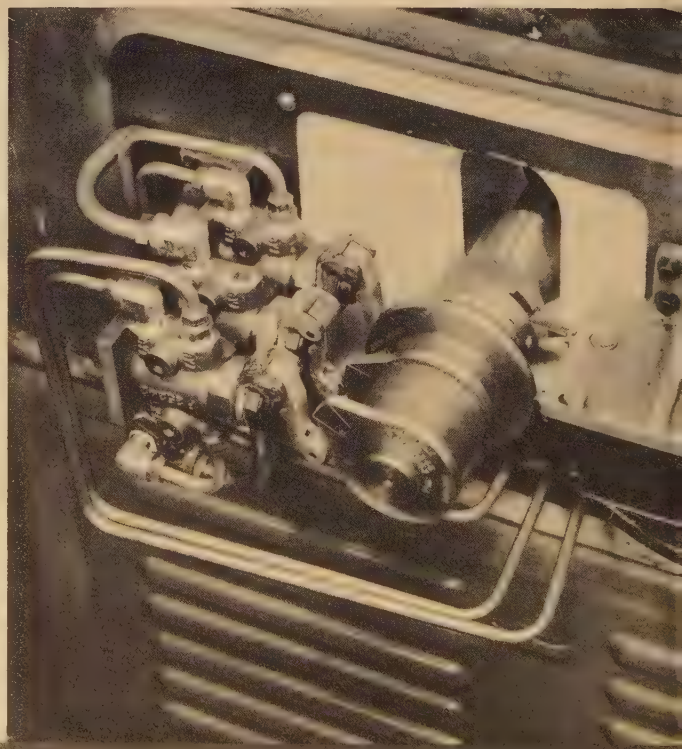
- AUTOMATIC CHUCKERS
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- LUCAS PRECISION HORIZONTALS
- NEW BRITAIN +GF+ COPY LATHES

See the following four pages for other New Britain New's.



The secret of precision boring is constant close control of the tool

Precision-ground cams assure accuracy of tool paths under all conditions on a New Britain Precision Boring Machine. Equally important is split-second control of cycle timing. This is accomplished by means of the program drum illustrated at the right. Cams and trip dogs accurately time all motions of the tool and the machine units. It is enclosed by a lift-off cover and is immediately accessible from the operator's side of the machine. These are important features of the New Britain approach to more profitable precision boring.



New Britain +GF+ Copying Lathe combines 2 operations in 1 pass

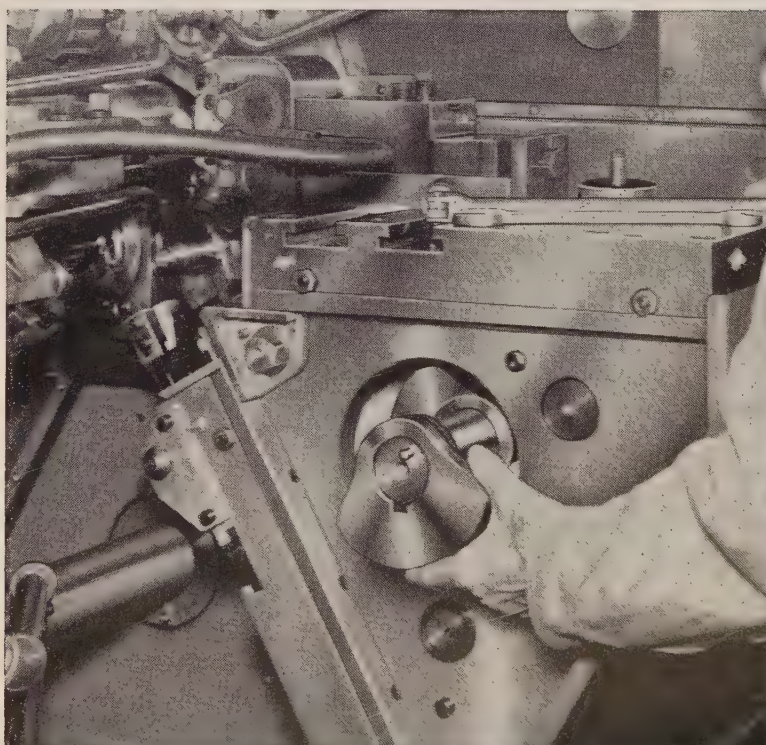
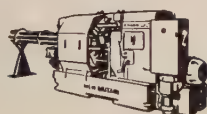


Yes, we taper turn the shaft end of this gear blank and copy turn the rest in the same operation — which keeps the cost of the piece down. This happens all the time on a New Britain +GF+ copying lathe. You can spot other examples of it in the other pieces on the table.

The New Britain +GF+ is a copy turning machine, not a lathe with an attachment. The copy slide is part of the carriage for taking heavy cuts at carbide speeds. Contoured work in small lots or on an automated basis, is accurately turned from a simple template on the front of the machine.

The secret of carbides on bar machines is elimination of slide deflection

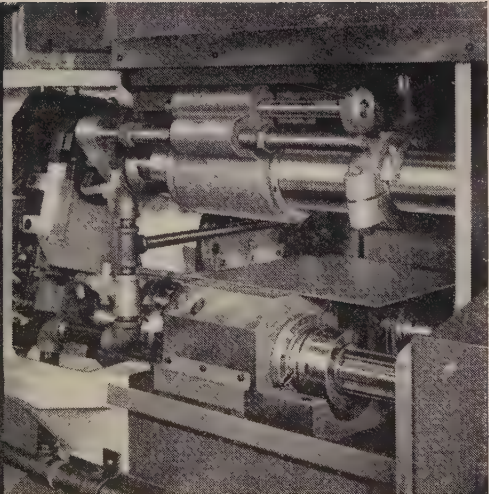
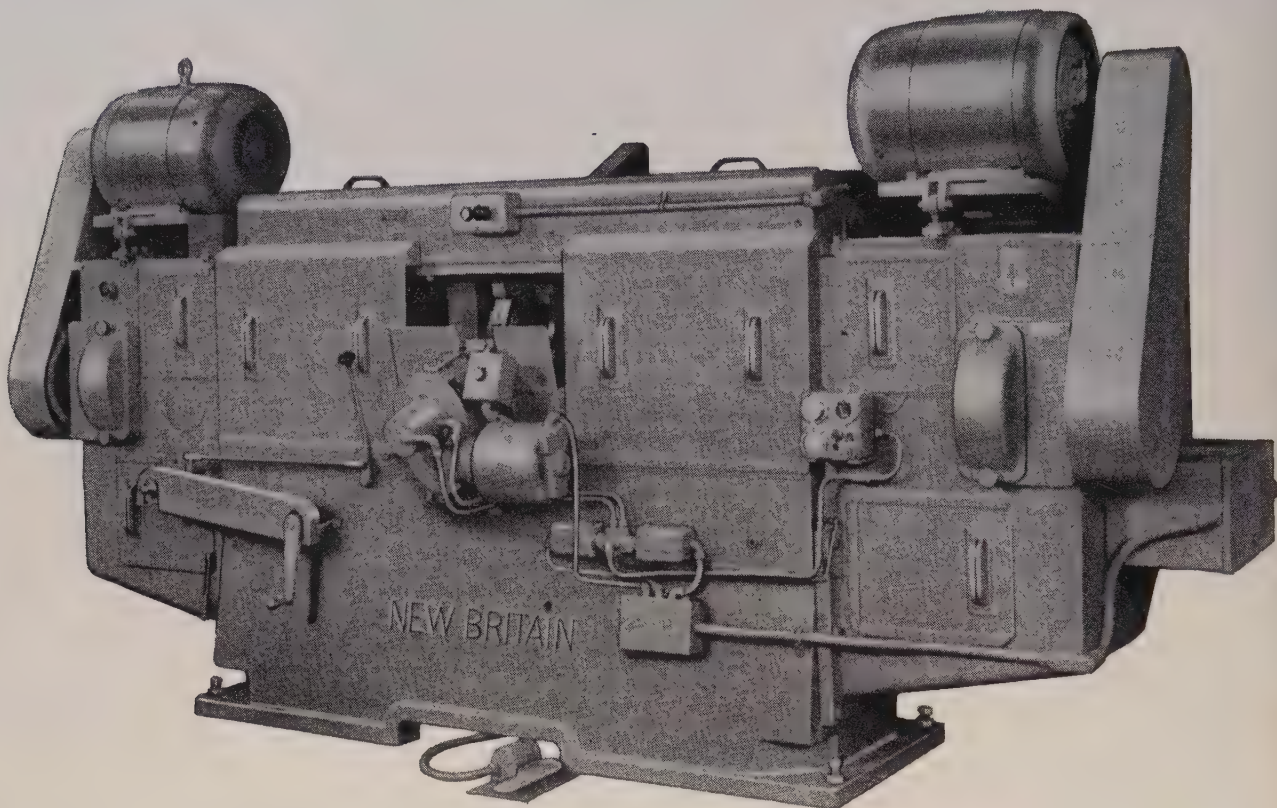
Carbides won't tolerate sloppy feeds. Positive slide actuation on a Model 601 New Britain Automatic results from mounting the cams directly behind the slides. A plus benefit is that cross slide feed changeovers can be made in minutes with these pick-off cams.



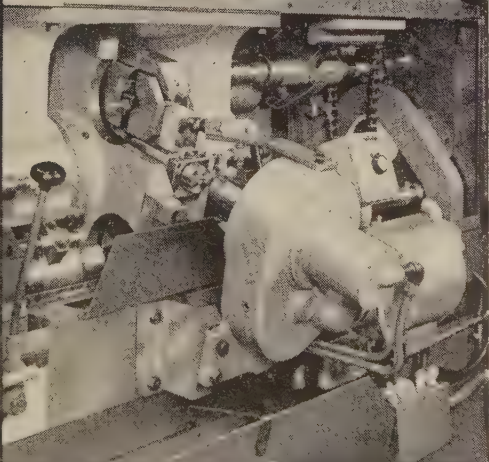
See the preceding two pages and the two following for other New Britain New's.



Six-spindle production in "Three-spindle" time



View of the rear side of the machine with the guards removed, showing the two lower spindles and the upper threading spindle.

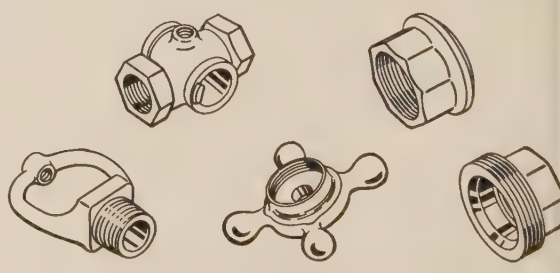


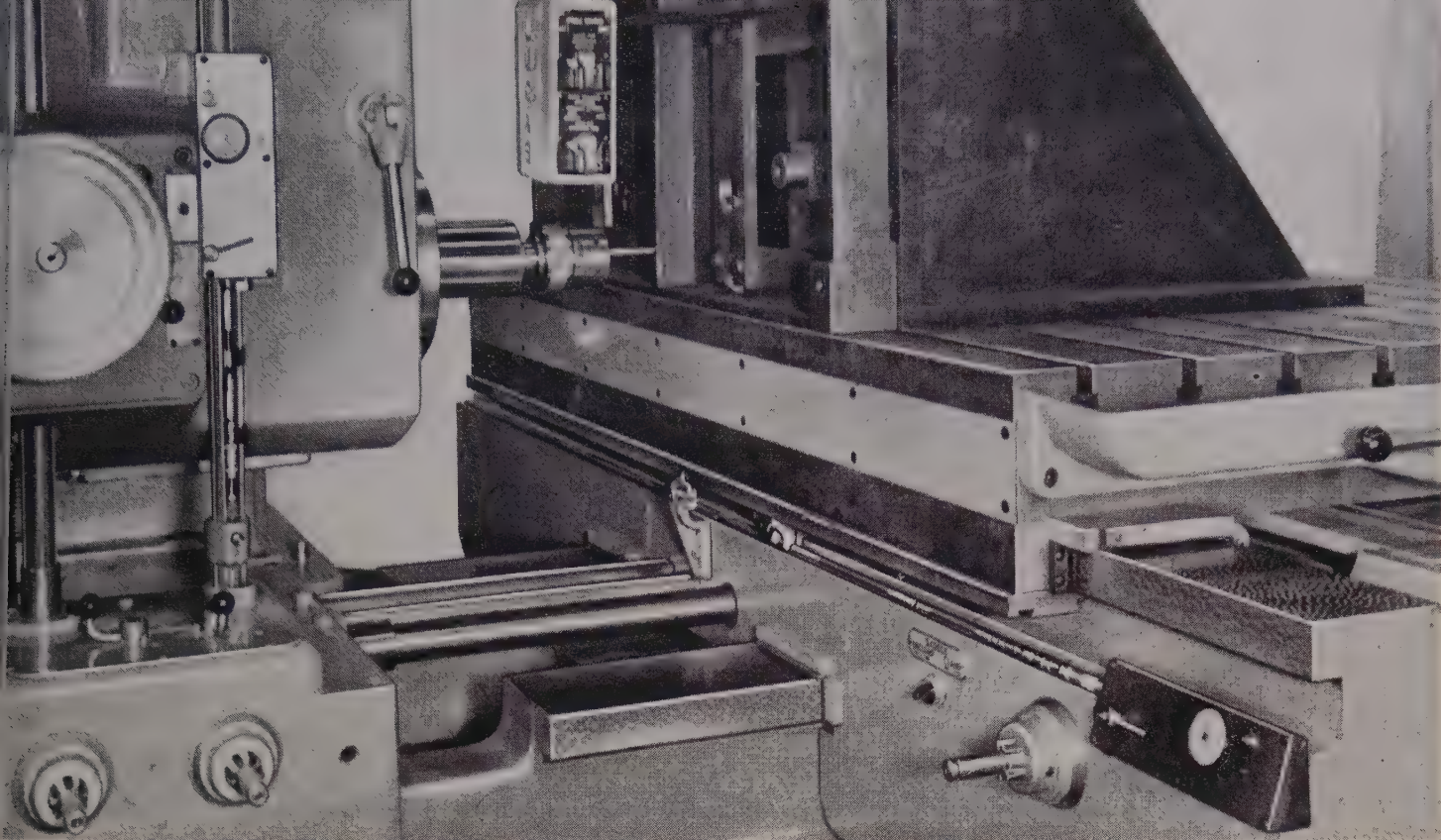
All controls are within easy reach of the operator. Chucking is accomplished during the operational cycle by manual or semi-automatic means.

This new double-end New Britain Model 365 chucker is specifically for parts which can be machined simultaneously at both ends in one chucking, or two pieces per cycle.

It furnishes the *high spindle speeds* required for work on brass and aluminum, plus *beef* for machining and threading steel, plus *accuracy* guaranteed by a new turret locking mechanism. Idle time is minimized by power chucking and rapid traverse of all slides.

If your requirements include accurate volume production of double-end work, the Model 365 New Britain chucker can be a highly efficient money-maker for you. For more information, please ask for the catalog on Model 365.

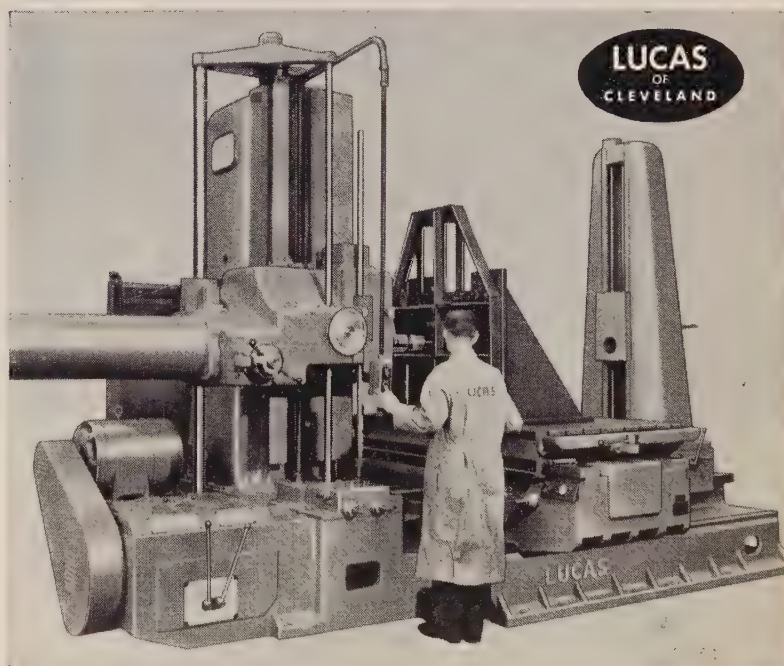




Automatic Power Positioning is a money-maker on boring machine jobs

The entire operation of setting the head and table is done through power feeds at rapid traverse speed. The operator simply inserts the proper measuring rods and starts the positioning cycle. It takes an absolute minimum of time and reduces the chance of error in locating bore centers.

Lucas pioneered and specializes exclusively in building the horizontal boring machine. The full possibilities of this multi-purpose machine are enjoyed by Lucas owners, because of the many important Lucas features and improvements — including Automatic Power Positioning, new simplified pendant control and many more. May we send you the latest descriptive Lucas catalog. Address Lucas Machine Division, The New Britain Machine Company, 12302 Kirby Avenue, Cleveland 8, Ohio.



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See the preceding four pages for other New Britain New's.

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Installed at the Green River
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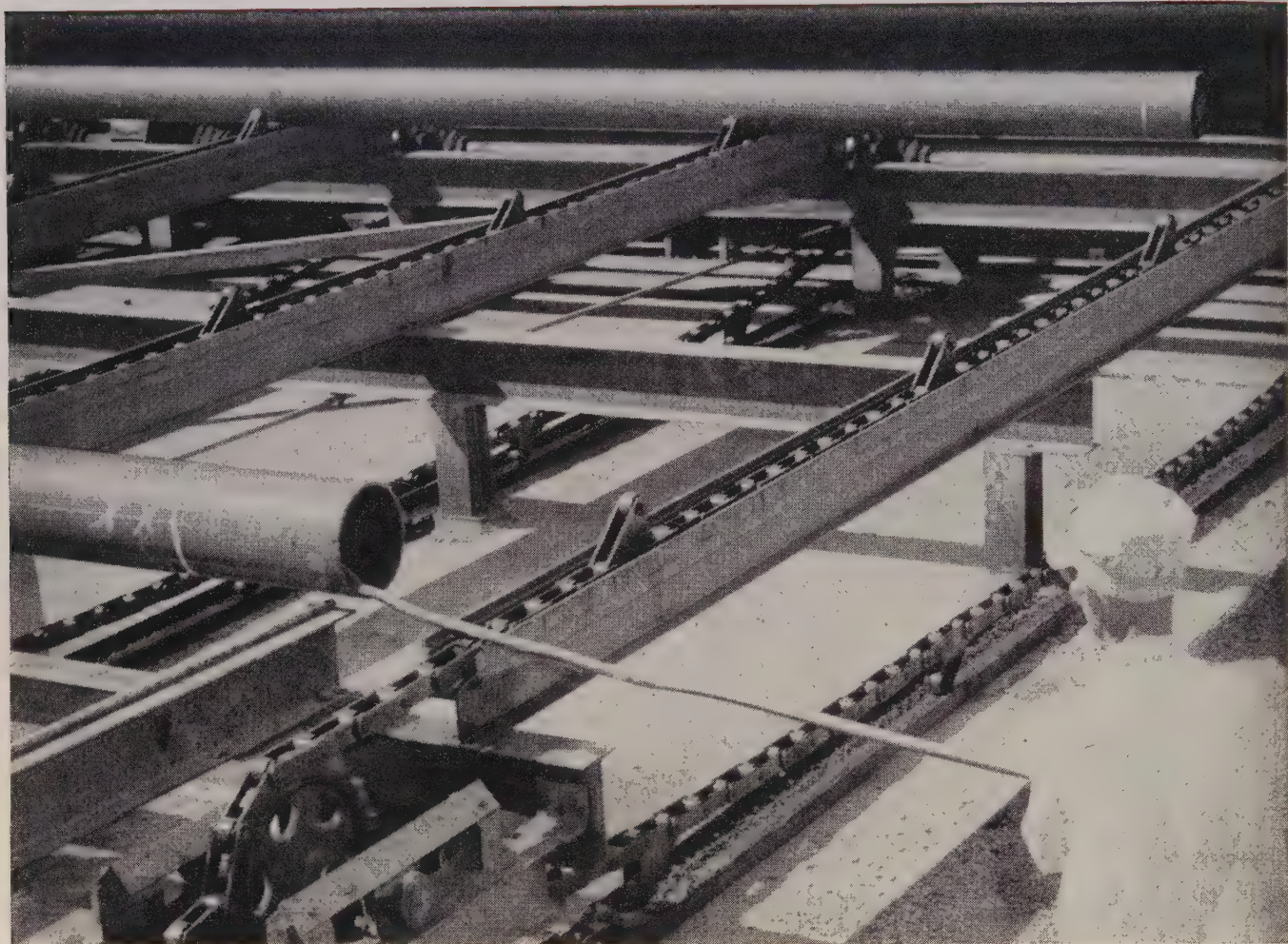
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1500 Ton Open Forging
Press showing Vessel Bil-
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LXS is the chain for this job



Transfer conveyor from inspection to cut-off at steel pipe mill uses Link-Belt LXS chain with attachments to move the heavy pipe smoothly.

Heavy loads, impact, exposure— so LINK-BELT LXS is a natural choice at steel pipe mill

Handling 40-foot lengths of pipe that weigh around 1000 pounds each is a job that demands real stamina in chain. That's why the designers of this pipe mill specified Link-Belt LXS.

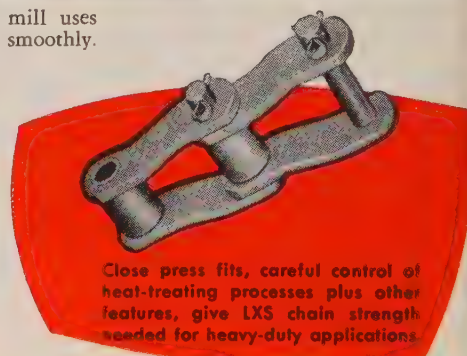
Use of selected steels plus accurate sizing and close fit of mating parts gives this chain ruggedness and accuracy. *It's the long-life answer for severe conveyor and drive service.*

And the story's the same for every drive and conveyor requirement—you'll find the chain that's *best* for the job in the complete Link-Belt

line. No other single source can equal Link-Belt's broad range of roller and silent chain . . . of cast, combination, forged and fabricated types.

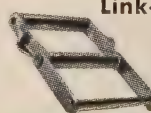
Your nearby Link-Belt office or authorized stock-carrying distributor can give you all the facts. Call today.

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Close press fits, careful control of heat-treating processes plus other features, give LXS chain strength needed for heavy-duty applications.

No ONE chain serves every purpose
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Bench
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CALENDAR OF MEETINGS

March 28-29, American Institute of Electric Engineers: Materials handling conference, Hotel Cleveland, Cleveland. Institute address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

March 28-30, American Management Association: Manufacturing conference, Palmer House, Chicago. Association address: 330 W. 42nd St., New York 36, N. Y. Vice president-secretary: James O. Rice.

March 28-April 1, Western Metal Congress & Exposition: Pan-Pacific auditorium, Los Angeles. Information: American Society for Metals, 7301 Euclid Ave., Cleveland 13, O. Secretary: W. H. Eisenman.

March 29-31, Steel Shipping Container Institute Inc.: Annual meeting, Biltmore hotel, Palm Beach, Fla. Institute address: 600 Fifth Ave., New York 20, N. Y. Secretary: L. B. Miller.

March 29-April 7, American Chemical Society: Spring meeting, Cincinnati. Society address: 1155 16th St., N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

March 30-April 1, American Institute of Electrical Engineers: American power conference, Hotel Sherman, Chicago. Institute address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

April 4-5, Stanford Research Institute and Atomic Industrial Forum: West coast conference on applied industrial uses of atomic energy, Mark Hopkins hotel, San Francisco. Information: Stanford Research Institute, Stanford, Calif.

April 4-6, National Fluid Power Association: Annual meeting, Broadmore hotel, Colorado Springs, Colo. Association address: 1618 Orrington Ave., Evanston, Ill. Executive secretary: Barrett Rogers.

April 11-13, Wire Reinforcement Institute Inc.: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute address: National Press Bldg., Washington 4, D. C. Managing director: Frank B. Brown.

April 11-16, Concrete Reinforcing Steel Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute address: 38 S. Dearborn St., Chicago 3, Ill. Managing director: H. C. Dezell.

April 12-13, Bituminous Coal Research Inc.: Annual meeting, William Penn hotel, Pittsburgh. Association address: 803 Southern Bldg., Washington, D. C. Secretary: C. A. Reed.

April 12-13, Steel Joist Institute: Annual meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute address: 1346 Connecticut Ave., N.W., Washington 6, D. C. Managing director: C. H. Luedeman.

April 12-14, American Gas Association: Sales conference on industrial and commercial gas, Hotel Statler, Boston. Association address: 420 Lexington Ave., New York 17, N. Y. Secretary: M. A. Combs.

April 13-15, American Society of Lubrication Engineers: Annual meeting and exhibit, Sherman hotel, Chicago. Society address: 84 E. Randolph St., Chicago 1, Ill. Secretary: W. P. Youngclaus Jr.

April 13-15, Society of the Plastics Industry Inc.: Pacific Coast conference, Palm Springs, Calif. Society address: 67 W. 44th St., New York 36, N. Y. Executive vice president: William T. Cruse.

April 14-15, Industrial Truck Association: Spring meeting, Drake hotel, Chicago. Association address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: Wm. Van C. Brandt.

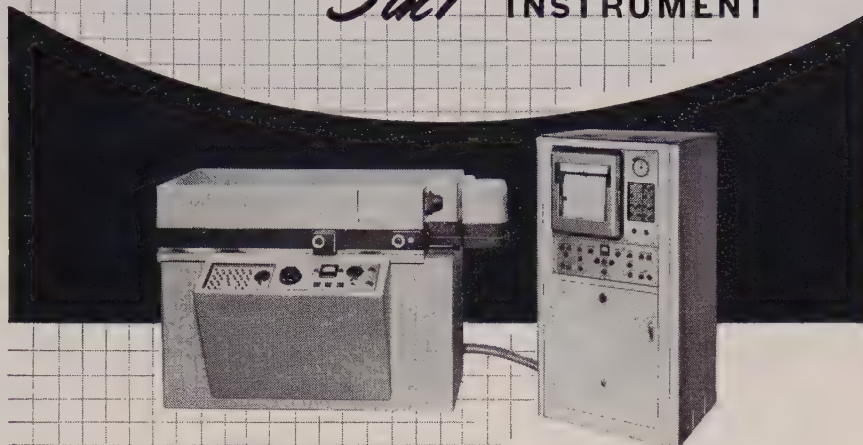
April 15, Foundry Equipment Manufacturers Association Inc.: Spring meeting, Sheraton-Carlton hotel, Washington. Association address: One Thomas Circle, Washington 5, D. C. Executive secretary-treasurer: C. R. Heller.

April 18-19, National Air Pollution Symposium: Huntington-Sheraton hotel, Pasadena, Calif. Information: Stanford Research Institute, Stanford, Calif. Chairman: Dr. A. M. Zarem.

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THE "RPMster" DRILL OF 1001 SPEEDS

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Alloy steel quill with rack teeth cut integrally.

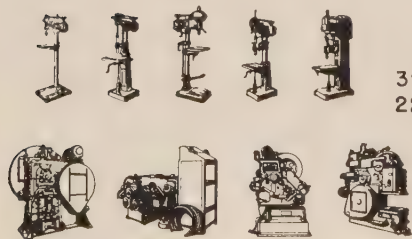
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500 square inch working surface.

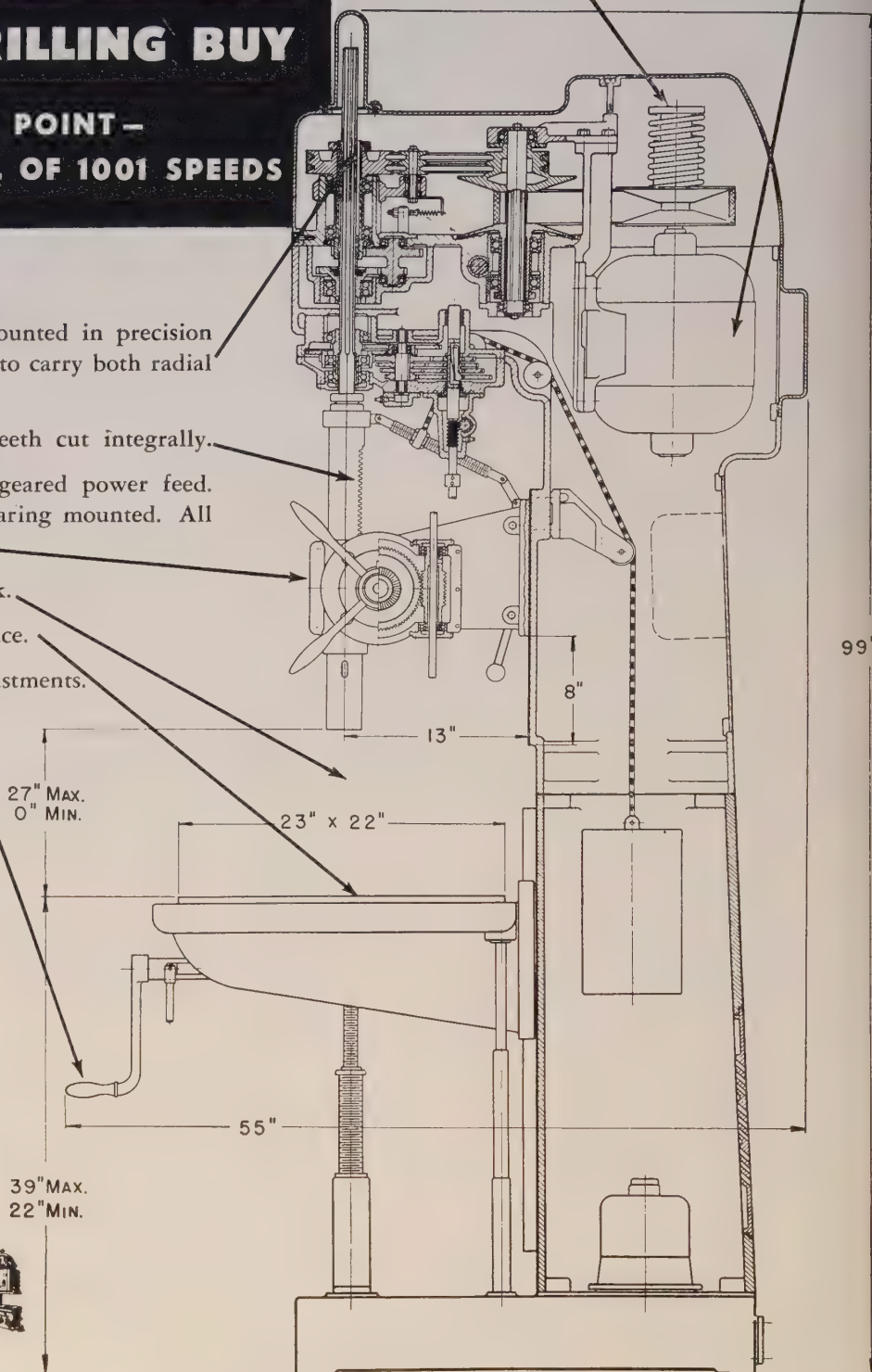
Convenient crank or lever adjustments.

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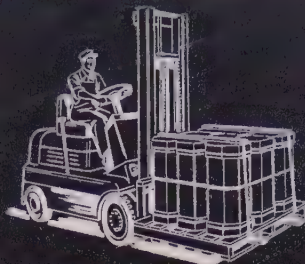
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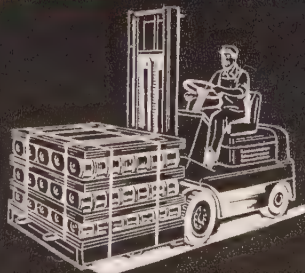
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475 assemblies

an hour

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Method. Load sub-assemblies from conveyor line to Denison Index Table. Table automatically indexes sub-assembly beneath hydraulic ram of Denison Multipress. Accurately controlled single stroke of hydraulic ram pins back 4 ears. Results are uniform. Production . . . 475 units an hour.

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Do Your Worst to the free Tuffy Sling we send you! Loop it, kink it, jerk it, knot it—subject it to the conditions that ruin the most slings for you. You'll find Tuffy takes more rough treatment than any sling you've ever used!

Tuffy's Patented Construction is an exclusive, machine braided-wire fabric that's extra flexible to help resist kinking. If you *can* kink it, your Tuffy Sling is easy to straighten without material damage!

Send For Your Free Tuffy Sling and try it on the toughest tests you can devise. Find out for yourself why Tuffy Slings are the toughest you can buy!

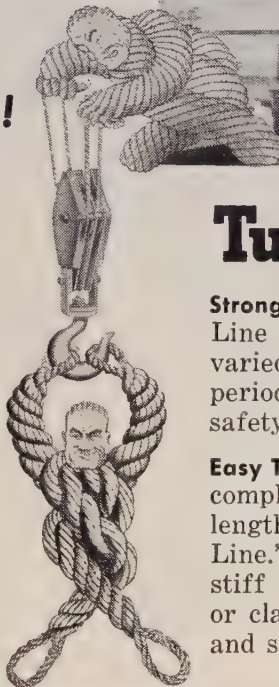
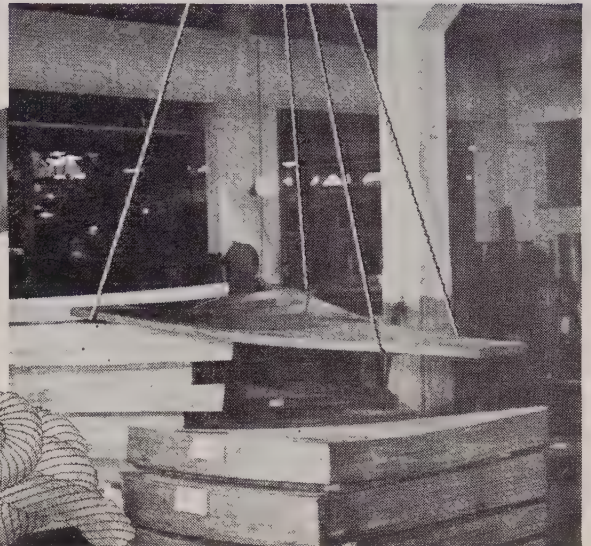
**Your Tuffy Distributor
Stocks to Meet Your Needs**

When You Need Rope Fast, your Tuffy distributor is a handy man to know. Because he's happy to stock ahead of your replacement schedule . . . be ready with the rope you want, *when* you want it. Just give him an idea of your requirements and he will order from his nearby mill depot for months-ahead service. Talk to him *soon*!



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Wire Rope corp.**

Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric



Tuffy® HOIST LINE

Strong As Tuffy Slings! Tuffy Hoist Line is constructed to handle the varied strains of lifting over a long period of time . . . give you extra safety from drum to sling!

Easy To Order because there are no complicated specifications — just length, diameter and "Tuffy Hoist Line." Whether you use overhead, stiff leg or mobile cranes, derricks or clam shells, try Tuffy Hoist Line and see the difference!

TEAR OFF AND MAIL COUPON NOW!

Union Wire Rope Corporation
2160 Manchester Ave., Kansas City 26, Mo.

At no cost or obligation to me, please rush the material I have checked

- ☐ FREE 3-Ft. Tuffy Sling!
- ☐ FREE Sling Handbook and Rigger's Manual, Featuring 12 Tuffy Factory-Fitted Types!
- ☐ Name and Address of Tuffy Distributor Nearest Me!

FIRM NAME _____

BY _____ TITLE _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

STEEL...one piece or a truckload



**Delivered where you want it
... when you want it**

Sure we like big orders—and we handle them easily, every day, because our stocks are the world's largest, our cutting and handling facilities unsurpassed. But our business depends on small orders as well, and you'll find we never lose sight of this fact. Whether you want one bar or a thousand—one sheet or many tons, you'll get courteous service—quick delivery. Dependable, certified quality, too. Call us and see.

JOSEPH T. RYERSON & SON, INC.

RYERSON STEEL

Principal products in stock: Bars, structurals, plates, sheets, tubing, alloy steel, stainless, re-bars, etc., also machinery & tools

PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT • BUFFALO
PITTSBURGH • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Metalworking Outlook

Already this year 14 states have enacted new tax rates, expanded coverage and/or higher benefits in their unemployment compensation laws. Commerce Clearing House reports that revisions are pending in 30 more states. The union drive for the guaranteed annual wage and the all-time record of \$2 billion paid in benefits last year focuses attention on the federal-state unemployment insurance system. Since 1949, the average weekly benefit paid to jobless workers has risen from \$20.50 to the 1954 high of \$25.

The Air Force will ask for competitive bids to determine which company will operate the two heavy extrusion presses at Halethorpe, Md. Kaiser Aluminum & Chemical Corp. was originally scheduled as the operator of the 8000-ton units, and, presumably, it still could be if it submits the low bid. Only those companies which have experience making aircraft extrusions are eligible to bid.

Don't look for any repeat of the January-February "white sale" of power transformers and switchgear. Now that the event is over as mysteriously and rapidly as it started, industry men are trying to figure out what happened and why. The demand from utilities for that equipment slipped markedly late last year. In January, somebody (nobody knows or will admit who started it) cut prices. Competitors followed. The smaller makers of the equipment were the first to drop out of the price war. In two months, the "sale" was over. Says one executive in a smaller company: "The thing was unique in my experience. I don't think there was any long-term planning about it. It just happened."

Edward F. Howrey, Federal Trade Commission chairman is hinting broadly that a law is needed to deal with vast enterprises like General Motors Corp. In hearings before the House Appropriations Subcommittee considering the FTC budget for fiscal 1956, he said: "We think there is an unfortunate concentration of production in the automobile field," adding: "There is no law under which we can dissolve General Motors, Ford or Chrysler into a great many independent companies." But there's no sign that FTC or any other agency will specifically recommend such a law.

Yet, FTC is bearing down on GM. It is reportedly checking compliance with an old cease-and-desist order against the corporation which bars the use of exclusive-dealing agreements for spare and repair parts. A second

[illegible]

Metalworking

Outlook

inquiry deals with complaints that GM advertises that genuine GM parts can be bought only from its dealers. Independent parts dealers claim that some of their parts are identical with GM's.

Delinquent on Renegotiation

Some 8000 defense contractors subject to renegotiation are delinquent in filing with the Renegotiation Board. It estimates that about 1000 of those may end up in assignments to field offices for action. The board also calculates that the over-all amount of governmental contracts subject to renegotiation under the 1951 act is \$175 billion; that the total of excessive profit determinations amounted to \$232 million through Dec. 31, 1954.

The Electrical Farm

The growing use of electricity and automatic equipment going on in industry is being paralleled on the farm. Karl H. Runkle, General Electric Co.'s manager of industrial sales, predicts that by 1965 the average American dairy farm will be using 400 per cent more electric power than it now uses. "By 1975," he says, "eggs will be gathered seconds after they are laid, then washed and graded automatically." He predicts that in the southern and central areas of the nation heat pumps maintaining a 50-to-60-degree temperature range in poultry laying houses will assure maximum production. He estimates that by 1965 the total farm electrical load will reach 50 billion kw-hr; 70 billion kw-hr by 1970.

More People, More Markets

The population will rise from an estimated 164 million now to 177 million in 1960, to 221 million in 1975. For industry, that 35 per cent gain in the next 20 years predicted by the Census Bureau means radically changing markets as well as growing ones. Can business keep pace?

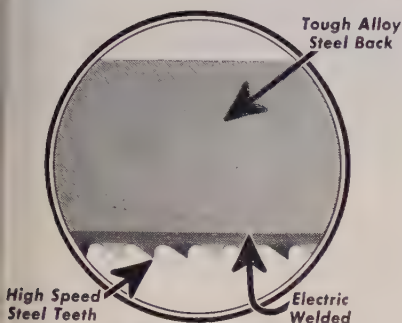
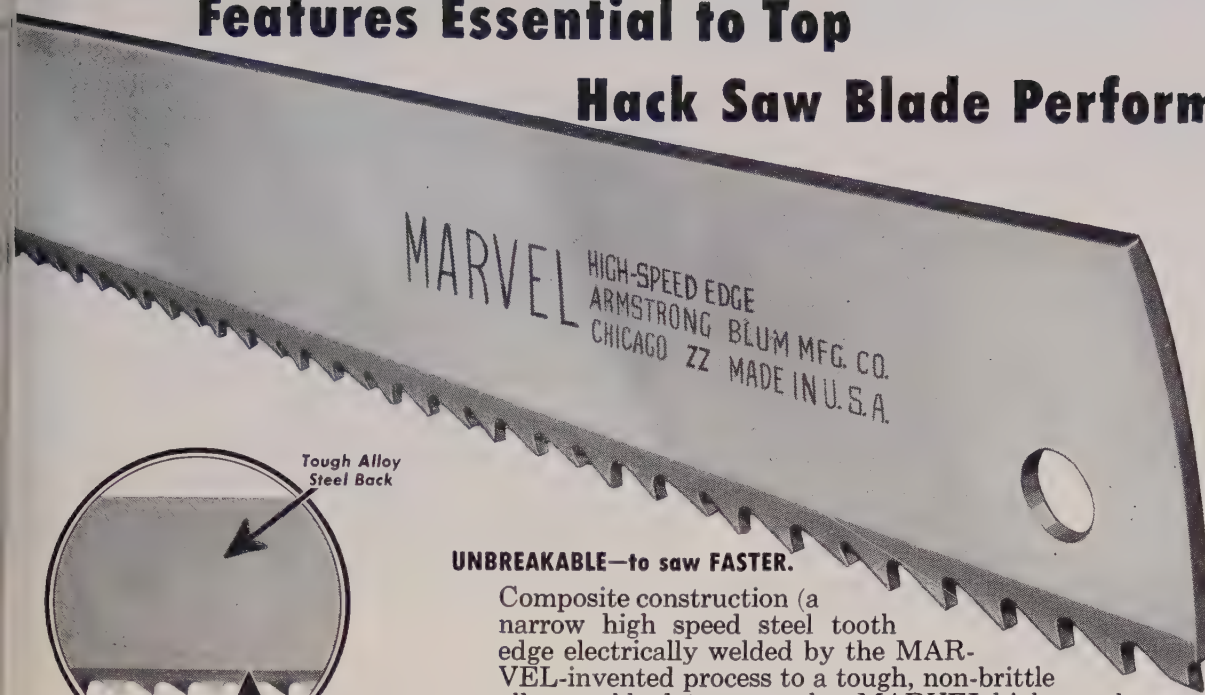
Straws in the Wind

Western states are still "importing" 2.5 million tons of products employing steel from other parts of the nation . . . You can get from Commerce department field offices or the Superintendent of Documents a new, 25-cent publication describing how the Defense Materials System works . . . Detroit Edison Co. and other firms will back a nonprofit corporation to build a \$45-million atomic power plant in the Detroit area . . . The Justice department says it will sue if Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. proceed with merger plans.

This Week in Metalworking

Government help is needed to solve troubles in titanium (p. 37) . . . Guided missiles: Soaring market for subcontractors (p. 38) . . . Automation will have a big year in 1955 (p. 39) . . . Nonferrous foundries are troubled by materials shortages (p. 40) . . . How steel foundries push product development (p. 41) . . . A steel marking system may become a reality by summer (p. 43).

Features Essential to Top Hack Saw Blade Performance



UNBREAKABLE—to saw FASTER.

Composite construction (a narrow high speed steel tooth edge electrically welded by the MARVEL-invented process to a tough, non-brittle alloy steel body), means that MARVEL high-speed-edge can be subjected to the MAXIMUM feed pressure that any hack sawing machine is capable of applying. MARVEL blades need not be "babied" for fear of breakage!

SHATTERPROOF—for SAFETY.

MARVEL blades never shatter or "explode" as do the ordinary "brittle" blades shown at left which so often cause personal-injury accidents such as the loss of an eye or severe laceration and expensive damage to the sawing machine. Operators who use MARVEL blades exclusively soon "get the habit" to apply heavier feeds, greater blade tension, higher speeds—to do their work faster, because they know they are SAFE with MARVEL.

SHARPER, PREMIUM-STEEL TEETH—to wear LONGER.

Teeth are accurately machined by a MARVEL-invented process that assures sharper tooth points and positive uniformity of tooth shape and degree of set from end-to-end of every MARVEL blade. The steel used in the tooth edge is carefully selected from the finest high speed steels available throughout the world, regardless of cost or source—truly premium steels, without premium cost.

QUALITY CONTROL—to assure UNIFORMITY.

With more than a quarter century of *experience* in inventing, perfecting, and producing welded-edge hack saw blades, MARVEL has provided its own laboratory with the most modern metallurgical instruments and techniques known to the applicable sciences for the specific purpose of maintaining highest possible quality control. Coupled with rigid tests and meticulous inspection of every MARVEL blade, uniform quality is assured.

These are only a few features that make MARVEL High-Speed-Edge Blades such outstanding performers.



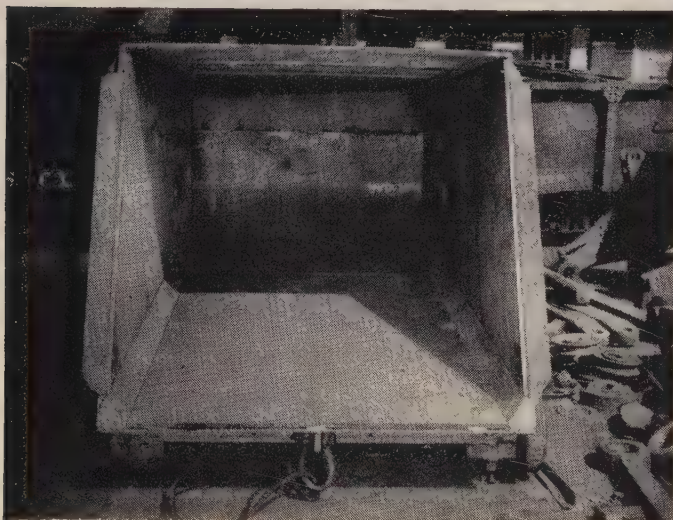
Ask for the latest MARVEL Cutting Tool Bulletin and the name of your closest MARVEL Distributor.

Manufactured only by
ARMSTRONG-BLUM MFG. CO. • 5700 West Bloomingdale Avenue • Chicago 39, U.S.A.

USS "T-1", A Nickel Alloy Steel, Helps Save Money

Lips of Nickel Alloy Steel show 11 times the life of the previous material used . . . in Clamshell Bucket

T-1 steel not only replaced a more expensive material here, but also outlasted it by 11 to 1. In this application, T-1 is still on the job after 11 months, handling open hearth sinter, whereas a wear resisting steel cracked and failed in 30 days under abrasion, impact and operating temperatures of 500 to 600°F.



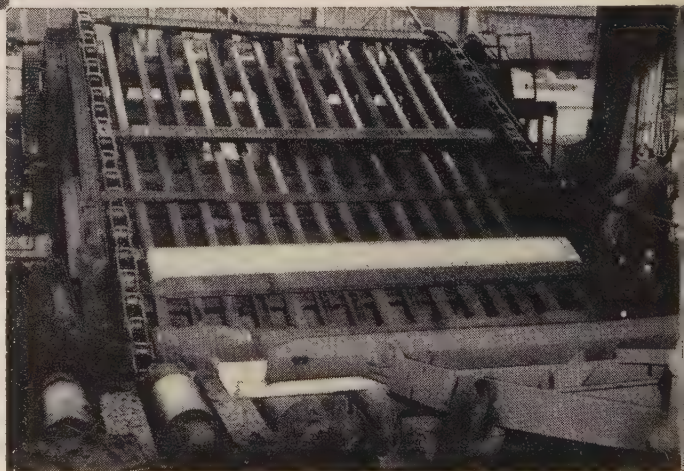
4 to 1 Better Service than carbon-manganese steel . . . in Skip Car Bottoms, Sides and Bail Plates

On skip cars handling coke, ore and limestone, T-1 steel bottoms, sides and bail plates are saving money. So far they have outlasted carbon-manganese steel 4 to 1. This four-fold longer life means more use per dollar for T-1 steel even though its initial cost is about twice that of the steel it replaced.

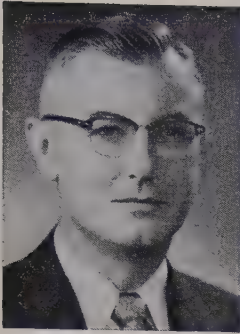
Unmatched Performance under heat and wear . . . in Blooming Mill Conveyor Chain

Here's a 40" blooming mill conveyor chain for lifting hot slabs at U. S. Steel's Ohio Works. Various materials used for chain failed under the severest impact conditions imaginable, caused by falling or jammed hot slabs. Notice the good appearance of the present chain made from T-1 steel. This product has far outlasted all previously used materials.

These applications in U. S. Steel's Ohio Works show how T-1 steel can reduce your maintenance, operating and repair expenses under like conditions. Write for complete details.



THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET
NEW YORK 5, N. Y.



March 28, 1955

Continuing Crisis

Today, the housewife pays \$1.08 for a pound of coffee that cost 34 cents in 1940. If she pays for it from her husband's wages, the increase is bearable because his earnings have increased almost proportionately. If she is buying from a pension or other fixed income, she's likely to be having financial troubles.

The industrialist pays \$2.60 for plant and equipment that cost \$1 in 1940. If he's replacing equipment installed then, today's cost is more than two and a half times the original cost. If he's depending on monies charged to depreciation for the replacement of the facilities, he, like the housewife on a fixed income, is in trouble. The depreciation dollars recovered today, based on dollars spent on facilities before inflation, simply are not enough to replace those facilities.

Inadequate depreciation allowances have been a problem since inflation began to spiral. Accelerated amortization for defense facilities was a helpful temporary expedient. The reforms incorporated in the 1954 revenue act are a partial correction. But for most companies the gap between funds available for replacement and modernization of plant and equipment and the costs of such replacement and modernization represents a continuing crisis. For many companies, it will get worse before it gets better.

The problem is receiving thoughtful consideration by business management today. It frequently is discussed in the annual reports of metalworking companies. In its latest, U.S. Steel devotes six pages to depreciation, and concludes that continuance of present tax policies in respect to wear and exhaustion of equipment "automatically guarantees something of a future crisis."

The pinch will be the tightest in the years immediately following expiration of accelerated amortization.

If industry's high rate of capital expenditures is to continue to contribute to a high level of employment and prosperity, if our industrial plant is to be maintained at peak efficiency, there must be a more realistic re-evaluation of depreciation allowances.

Politically, it is not easy. Depreciation reform does not win many votes. But businessmen must find more effective ways to communicate the situation to those responsible for tax policies.

Walter J. Campbell

MANAGING EDITOR

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SHEET
NO. 3



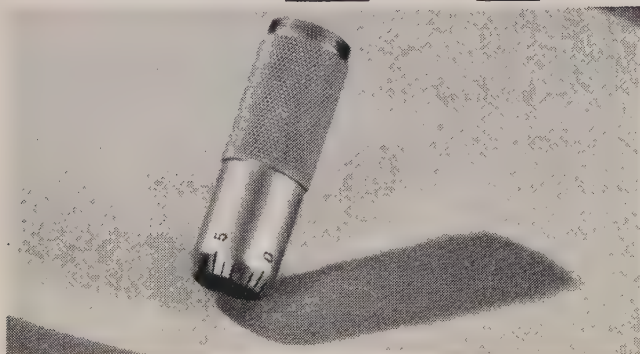
facts about

*Patented Tradename
of Inland Steel Company,
leaders in development
of Ledloy Steels.

LEDLOY*

LEDLOY INCREASES PRODUCTION 50% ON PRECISION MICROMETER PART

**Tools last longer . . .
machines work more, idle less!**



Machining a steel bar into this micrometer thimble calls for forming, drilling, reaming, knurling, threading, and cutting. Tolerances must be precisely controlled, otherwise rejects start piling up. For this exacting job, Ledloy proved better on every count.

When this well-known instrument manufacturer switched to Ledloy instead of the B-1113 screw stocks he had been using, the following advantages were quickly apparent:

- production increased 50%
- tolerance control was more uniform
- rejects dropped 5%
- finish was superior
- tool life increased, machine down-time sharply decreased

Ledloy cuts machining time

Increased production and improved operation like this are typical of performance reports on Ledloy. The fact that Ledloy can be machined at extremely

high speeds (up to 45% faster than B-1113 in some cases) is only one of the reasons for its increased productivity. By cutting machine down-time, Ledloy gives far greater output per machine. The reason is that Inland's patented process of adding lead to steel lowers the steel's friction component, actually lubricates the cutting tool during machining. Less heat is generated and tool-edge build-up is minimized. Machines spend *more* time working, *less* time standing idle while tools are re-ground.

Yet Ledloy retains all the advantages of quality open hearth steel

You can expect from Ledloy the same performance in ductility, strength and heat treating properties that you get with good open hearth steel of comparable chemistry. This means that, using Ledloy, manufacturers of screw machine products and machined forgings can get more product per man-hour, superior machining and finishes without sacrificing all the desirable mechanical and metallurgical properties of open hearth steel.



If your product requires machining, it will pay you to get all the facts on Inland Ledloy. Ask your cold-drawer, forger or jobber about it today, or write Inland Steel Company for an interesting new booklet, "Properties of Inland Ledloy Steels."

world's most machinable steel!

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Rem-Cru Titanium Inc.

U. S. quantity buying of mill products (left), rather than of sponge, may help solve . . .

Trouble in Titanium

WHAT'S to be done about the slow development of titanium?

That will be the theme of a Senate investigation slated for later this year.

That's the question before a new Defense department steering committee.

That's the problem before industry, as evidenced in an open house at Mallory-Sharon Titanium Co. earlier this month (see page 102).

Headache No. 1—One difficulty is the government's stockpiling policy. Sen. James E. Murray (Dem., Mont.), chairman of the Senate Committee on Interior & Insular Affairs, will spearhead an investigation. Chief question: Why is the metal being stockpiled as sponge rather than as some more usable finished product? He has already sent exhaustive questions to people involved in titanium development at the Department of Defense and elsewhere.

Melters of titanium have been having a tough time. They must absorb the high costs inherent in

the experimental production of dribbling, small-quantity orders. Sponge producers have more protection because Uncle Sam's revolving stockpile takes what they can't sell. Even so, nobody's making much money on the metal. Last year only about 1250 tons of mill products were turned out by the four producers—Rem-Cru Titanium Inc., Titanium Metals Corp. of America, Mallory-Sharon Titanium Inc. and Republic Steel Corp.

Headache No. 2—A second problem is the matter of small orders. Defense Secretary Charles Wilson is backing a program to place direct government orders with melters for production quantities of mill products. They would be furnished at moderate cost to fabricators for experimental work in military components.

Says John H. Garrett, chairman of Defense's new steering committee on titanium research and development: "We believe a higher rate of production will reduce prices and give industry a chance

to develop process controls of aircraft quality. We are also thinking along the lines of perhaps 10,000 tons a year in military, but non-aircraft, applications."

Headache No. 3—The lack of quantity is probably at least partly responsible for lack of quality, the third major obstacle to surmount. The Garrett committee is asking for an expanded research program to fill missing links in past work and to establish a basis for improved alloys. Complaints about quality have been slowing fabricators' acceptance, particularly in civilian applications.

A titanium metallurgical laboratory is being established at Battelle Memorial Institute, Columbus, O., to advise the steering committee. It has a \$1-million grant, and will supply technical advice to industrial titanium users on a customer-service basis.

Stable Sponge—Sponge capacity contracted for presently is 22,500 tons a year. Don't look for any boost until the mill product situation is straightened out. Then Harvey Machine Co. may come in as a sponge producer. It already has done a lot of titanium machining

and wants an integrated operation. Republic is also a possibility as a sponge supplier because of its rutile deposits in Mexico.

One observer close to titanium says: "Aircraft speeds and altitudes make it essential that we build up our titanium industry. I think governmental buying of mill products will help the most by allowing new alloys to be tested on a production basis and by letting producers perfect processing methods. If we must have a Senate investigation, I am glad it will question the policy of stockpiling sponge."

Copper Price Going Up?

Copper at 36 cents a pound? It's a possibility, but nobody at the National Association of Waste Material Dealers in Chicago last week was willing to bet on it.

Chile holds the key. Less than a year ago it begged Uncle Sam to take 100,000 lb of copper. Now it is turning up its nose to American buyers; last week its red metal brought a record 45.50 cents a pound (see p. 124) in London.

With the copper shortage expected to last till midsummer, some observers believe Chile will temporarily get the 36-cent rate it seeks. Against that, copper men don't believe there will be any more of the metal on the market at that price. Why raise it.

A price hike is unpopular for another reason, too—because of the inroads of aluminum. Even at the present price of 33 cents, copper is about 10 cents a pound higher than aluminum. In many cases where aluminum will do the job, 2 lb of it goes as far as 1 lb of copper.

Along the same line, the Brass Mill Industry Advisory Committee wants the Business & Defense Services Administration to make up an estimated 42,000-ton shortage they say will exist by the end of May.

The group wants diversion to industry of all government stock produced under the Defense Production Act and actual withdrawal from the stockpile to make up the difference. Also requested: Embargoes on scrap and the continuation of present embargoes on refined copper of domestic origin.

From \$518 million in fiscal 1955 to \$700 million in 1956 . . .

Guided Missile Spending Soars

GUIDED MISSILES mean new opportunities for defense subcontractors.

The U. S. will spend nearly \$700 million on them in fiscal 1956, compared with \$518 million in the present fiscal year. Look for continuing increases in the years ahead.

Run Down—Boeing Airplane Co. is the prime contractor for the Bomarc missile; Hughes Aircraft Co. for the Falcon; Convair Division of General Dynamics Corp. for the Atlas and the Terrier; Bell Aircraft Corp. for the Rascal; North American Aviation Inc. for the Navaho; Glenn L. Martin Co. for the Matador; Western Electric Co. Inc. and Douglas Aircraft Co. Inc. for the Nike; Sperry Corp. and Douglas for the Sparrow; Douglas for the Honest John;

Firestone Tire & Rubber Co. for the Corporal; Northrop Aircraft Inc. for the Snark; and Chance Vought Aircraft Inc. for the Regulus.

An unusual amount of detail about one of the defensive missiles, the Falcon, has been revealed by Trevor Gardner, assistant secretary of the Air Force. It's one of the smallest we have in production. Weighing only a little more than 100 lb, the Falcon can be carried in quantity in one or two-man interceptor aircraft.

Really Works — It has been knocking down QB-17 and F-80 jet drones even without an explosive warhead—drones which were maneuvering in simulation of enemy bombers, which could have been carrying the hydrogen bomb. The missile receives target information with the speed of light. It decides what to do without making any human mistakes. It carries within its 100-lb package a power plant which drives it at supersonic speeds.

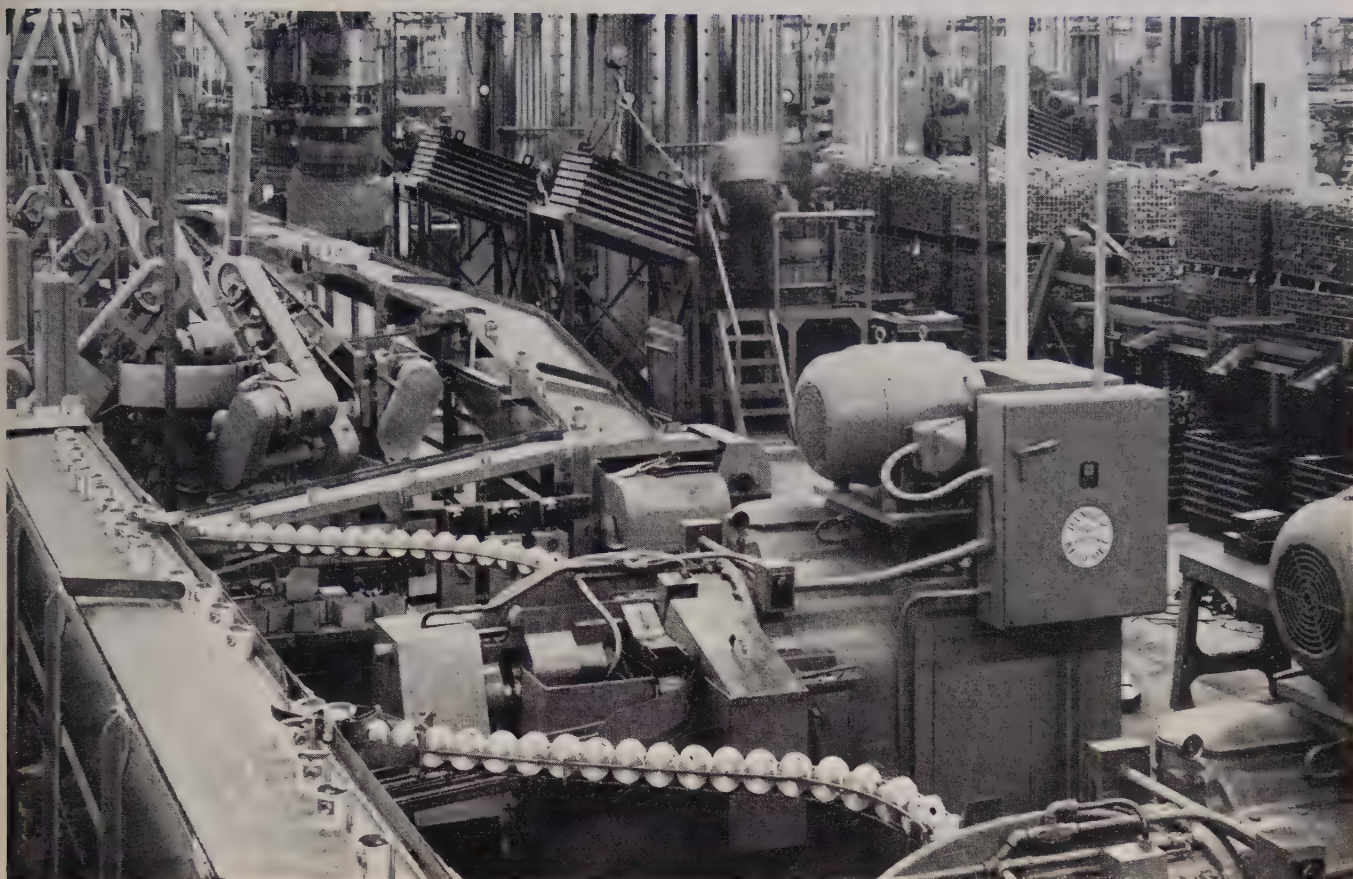
The Falcon is launched from interceptor planes miles from its target. The launch airplanes are guided to the proper firing position by electronic control systems which lock on the enemy bomber by radar and automatically fire the Falcon missiles.

On the Offensive—In our air offensive system, says Secretary Gardner, "the transition to missiles has already begun." To operate in darkness and in bad weather, the Matador has been developed. It's simply a small, fast airplane with a guidance system instead of a pilot. In addition, the U. S. now has three strategic, intercontinental missiles—the Navaho, the Snark and the Atlas. The most important is the last. It is launched by rocket motors developing thousands of tons of thrust and millions of horsepower within seconds.

In addition to those three intercontinental models, the U. S. is developing the Rascal—an air-to-ground strategic missile.



Firestone Tire & Rubber Co. officials inspect the Corporal guided missile



Ford Motor Co.

Increasing stress on industrial productivity demands . . .

Automation: Tool for Prosperity

"AUTOMATION is not a bogeyman; it is a necessity. Our danger is too few employable people, rather than technological unemployment."

Dr. Gordon W. McKinley, chief economist for the Prudential Life Insurance Co., predicts a 50-percent increase in gross national product by 1965, from \$365 billion to \$540 billion. But the available labor force won't keep pace. It will increase only some 20 per cent, from 64 to 77 million. Peter F. Drucker, another economist, believes: "The shortage of trained people is already the major limiting factor in our economic growth."

Spending—An industry-wide survey by *Automation*, another Penton publication, shows that the implications already are well accepted. Of some 3000 plants, about 920 reported that they would spend a total of \$347.7 million for automatic installations this year. About

\$20 million will be spent by small-lot production plants, about \$104 million by medium-lot production plants and about \$222 million by large-lot production plants.

Planned investment patterns are strikingly similar. The survey pegs the average of small-lot plant spending at \$255,000, medium at \$287,000 and large at \$474,000. Dollars will go for automatic drive and control equipment; automatic gaging, weighing and sensing devices; instrument and punched-tape controls; visual, audible and servo controls; and mechanized handling, conveying, feeding, sorting and assembling equipment.

Industry's Thinking—There'll be a strong increase in the use of all conventionally available equipment. Practical automation holds the answer to the many problems of producing a marketable product—quantity, quality and costwise.

Ralph J. Cordiner, General Elec-

tric Co.'s president, remarks: "Using the electrical manufacturing industry as an example, we know we must be able to double our production in the next ten years. This is typical of the task facing all fast-growing industries. How are we going to accomplish this increase? The answer lies in increasing productivity at each stage of development in our operations."

Bonus—Dr. W. R. G. Baker, another GE executive, pointed out to the Institute of Radio Engineers in New York last week that: "GE now has 45,000 employees working to produce products that didn't exist 15 years ago. In 1921, 5000 electric refrigerators sold for \$530 each. By 1950, the average price of the 6.2 million refrigerators made was \$258."

Automation is only an extension of the principles which made this sort of performance possible. Like it or not, it's here to stay. We should neither regard it, as Dr. Baker says, "as a benign fairy godmother who will turn raw materials into Cadillacs at the push of a button nor as a witch threatening to turn prosperity into depression overnight."



Reynolds Metals Co.

Nonferrous Castings Show Gains

NONFERROUS CASTERS are thinking in terms of a 15-per-cent increase this year over last for sand and permanent mold castings—if they can get enough copper and aluminum.

So far this year, they have improved their operations enough to warrant that estimate, but with metal supply on the tight side, they will have problems maintaining the higher level. If those problems are solved, 1955 could end up almost even with 1953 (see chart).

Construction Helps — Principal support of the nonferrous castings industry is the high rate of home building. New residences and certain commercial construction create strong demand for plumbing goods, which are heavy users of copper and its alloys. Another strong consuming field in the first half of this year is the automotive industry, with its blistering pace of new-car production.

In aluminum, there has been a decided shift in pattern, with die-castings making strong gains. However, sand and permanent mold

castings have a steady market in the aircraft industry, with between 1500 and 2000 lb in each airplane. Some aircraft plants are being shifted to guided missiles. As defense plans put more emphasis on this type aircraft, aluminum casters will benefit.

Even Keel for Mag—Sizable improvement in production of magnesium-base castings in 1955 is doubtful since the chief demand is from the aircraft industry. Because the aircraft program appears

to be stable over the next few years, any improvement would have to stem from new uses or an emergency calling for more planes.

The chief causes of worry for aluminum and copper-base casters are the shortage of primary and secondary ingots and price disparities between the two. The aluminum shortage, despite record production, stems from tremendous demand, both domestic and foreign, for the metal in all its forms. In copper, losses in mining and smelting resulting from strikes at home and abroad last year are combining with heavy consumption demand to create procurement difficulties for

Nonferrous Castings

(Net tons, excluding die castings)

	1952	1953	1954	1955
Aluminum	174,623	209,346	188,168	707,914*
Copper & Copper Alloys	500,825	495,248	417,037	
Magnesium	15,000	14,189	10,372	
Totals	690,448	718,783	615,577	

*Estimated by STEEL. Other figures U. S. Bureau of the Census.

foundries. In both metals, continued heavy governmental stockpiling is adding to supply woes.

Complaint — The Nonferrous Founders Society, Chicago, on behalf of its members, telegraphed Secretary of Commerce Sinclair Weeks that withdrawal of shipments and the allocation of aluminum by primary producers is forcing foundries to suspend operations as customers refuse delivery based on secondary metals. Historically, the secondary price is under primary by a cent or two, but now it is about 40 per cent above. The society says unemployment is spreading and erratic conditions in copper-base alloys are causing capital losses to operators and insecurity to workers.

The society asked Secretary Weeks to clamp a complete embargo on exports of scrap and to recommend the release of stockpiled metal.

As for copper, experts say there is no outright scarcity. But unless a user has well-established supply lines, he may have trouble getting enough to meet his production needs.

Gas Meter Use To Stay High

Gas meter production promises to stay at a high level. L. A. Dixon Jr., vice president, Rockwell Mfg. Co., Meter & Valve division, points to the growing use of gas appliances and home heating equipment in residential areas throughout the country.

Gas utilities expect to add about 1,200,000 homes for house-heating in each of the next three years, in addition to the 25,806,200 residences now using gas.

To meet this increase in the gas industry, Rockwell has expanded production facilities in two of its plants.

At DuBois, Pa., 19,000 sq ft have been added to the existing plant and an 11,000-sq-ft structure has been built at nearby Sykesville. These new plants make industrial gas meters ranging in capacity from 800 to 10,000 cu ft.

Construction of a 25,000-sq-ft addition at Norwalk, O., permits increased gas regulator production and the establishment of a new lab for regulator development and testing.



Corning Glass Works

Castings find applications in glassmaking as . . .

Steel Founders Push Product

PRODUCT development is paying handsome dividends in the steel foundry industry.

A typical success story is reported by the foundry that picked up a 400-ton order by converting an "impossible" compressor cylinder to simple, readily cast components.

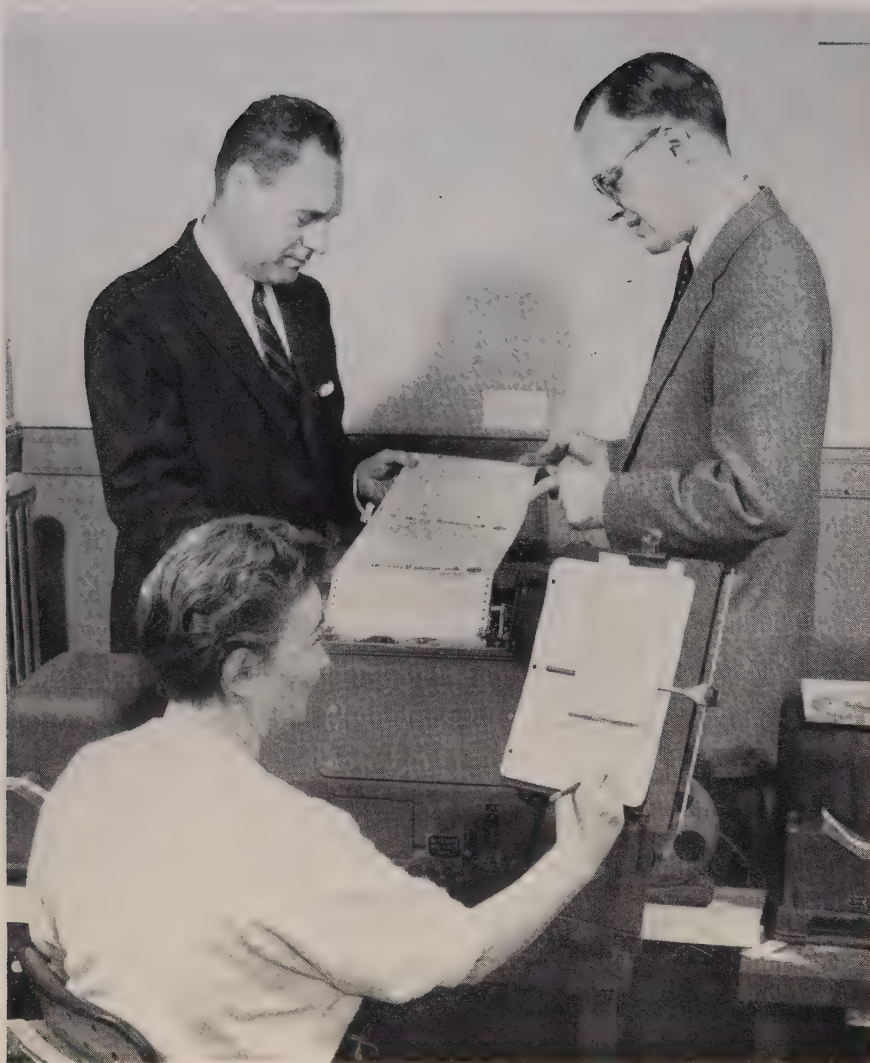
Started in 1948—The industry-wide movement was started by the Steel Founders' Society in 1948. To steer the program in the right direction, the society's first product development committee started at the grass roots by analyzing steel casting markets.

One of the committee's first steps was to aid in the establishment of product improvement methods. It fostered the minimum standard for steel castings, which has been adopted by the society, and promoted expanded use of brittle lacquer and strain gages in designing better products.

Matter of Education—The committee's educational activities include more than 25 local meetings, two clinics and talks before engineering societies on the properties of steel castings.

To encourage ingenuity in the production and use of steel castings, the 1954 product development committee sponsored a contest. With member foundries and users competing, it attracted 70 entries.

Victors — Winners were announced at the Society's annual meeting, Mar. 15-16, in Chicago. Receiving \$1000 first prizes were: R. E. Groethe, Corning Glass Works, Corning, N. Y. Representing users, his paper was titled, "Contour Chill Castings Are Foolproof Tools for Industry." The foundry entry that took first place was written by Sands G. Falk and David P. Miller, employed by the Falk Corp., Milwaukee.



Delta Power Tool officials look on as . . .

Order-Invoicing Goes Automatic

HOW WOULD YOU like to cut nine operations to three? That's what Delta Power Tool Division, Rockwell Mfg. Co., did by gathering all order and invoice writing from its field offices and centralizing them in its Pittsburgh headquarters and using electronic equipment.

"The new system," according to F. P. Maxwell, vice president in charge of the division, "will help us break the order-billing bottleneck that plagues so many sales departments today."

Benefits—By complete centralization of all Delta order handling and invoicing, the company has been able to:

1. Improve accuracy by minimizing chances for human error

and thus provide better service to customers.

2. Speed and simplify collections and issuance of credits and debits.

3. Control and balance inventories and production scheduling.

4. Level substantially the mountain of correspondence between sales offices, headquarters and plants, thus reducing operating costs.

5. Spread the peak load of accounting and paper work processing.

Preprogrammed — The system, which uses a programmed tape made from prepunched cards for teletype transmission, was prepared by Shaw-Walker Co., methods consultant, in collaboration with International Business Ma-

chines Corp., Bell Telephone Co., American Telephone & Telegraph Co., Standard Register Co. Inc. and Rockwell. It enables Rockwell to process an order in one day, compared with about a week under normal procedures. Equally helpful to sales executives: Management is supplied with proved daily records on new orders and shipments.

By careful scheduling of work flow to avoid duplication and waste motion and by performing repetitive operations electronically, Rockwell has reduced manual processing on orders and invoices from nine separate operations to three. Of these, only preparation of the bill of lading must be performed on a typewriter; the other operations are simple punching and "mark sensing" (indicating quantity with conductive pencil) punched cards.

Centralization—The new procedure calls for customers to send their orders directly to Pittsburgh, rather than to district offices. There they are registered and edited by order editors. In the order-writing area, prepunched cards, which include the customer's name, address and shipping-charge information, are pulled from a tube file. They are matched with another set of prepunched production description cards and miscellaneous data cards, which are key punched with information pertinent to the specific order.

Quantity of units is "mark-sensed" on the product card, which is color coded or similarly marked; at the same time, it is verified with the customer's order. Cards containing all order information are next fed into an IBM card-to-tape machine which prepares a five-channel punched programming tape.

Remote Control—The tape controls the teletype transmitter, which operates continuously from one order to the next. The sending apparatus produces three copies for customer acknowledgment. Hundreds of miles away the receiving apparatus in a company warehouse simultaneously produces three copies for shipping papers.

When the shipping order is received at the Pittsburgh order-

writing area by mail from the warehouse, the numerical file is relieved of all papers for complete shipments, and the numerical copy of the order goes to the order editors, along with a copy of the warehouse transmittal. Shipping papers then go to the backlog tub file where the original prepunched card has been held pending return of the shipping papers.

Basic operational advantages of the system have already been demonstrated, says Mr. Maxwell, through accuracy on price information, catalog numbers, products descriptions and invoicing of items in accordance with the customer's order. Product analysis billing for sales credit requirements has been reduced, as have time requirements to allocate billings properly.

Antitrust Report Coming

The long awaited report by the Attorney General's committee to study our antitrust laws will be blunted by dissents.

To get as much unanimity as possible, the committee has toned down many of its recommendations. Even so, it's still peppered with dissents.

It's scheduled for release on Mar. 31, but last week there was doubt that the 347-page document would be back from the printers in time.

The report will recommend repeal of the fair trade laws, close scrutiny of all mergers but no change in merger statutes. It will advise changes in antitrust proceedings so that most will be tried as civil, not criminal, cases. It will not oppose package licensing and patent deals such as Radio Corp. of America has. It will approve the Federal Trade Commission's economic approach to its antitrust and antimerger actions.

U. S. Would Supervise Safety

The proposed Industrial Safety Act (S. 1091) would give the secretary of labor authority to regulate safety in industry. Uncle Sam would pick up the tab for half to three quarters of the cost of state safety programs.

Marking Steel: Plan Set

Draft proposal is now being circulated to industry for comment and approval

BARRING FURTHER complications, Assistant Defense Secretary Thomas P. Pike will receive the final proposal for the selective marking of military steel and iron products by Apr. 30. The American Iron & Steel Institute is asking for industry comment on the drafted document.

Army Objects—Reportedly, the Army is not happy with the plan to mark steel with commercial designations, instead of specifications whenever possible. It also objects to provisions which call for no change in marking specifications without advance consultation with industry.

Several parts of the proposed document are of immediate importance to iron and steel manufacturers. Section 1.3, titled Legibility, reads: "Physical item marking on iron and steel products shall be legible and intended to resist effacement by contact incident to normal handling, shipment and storage."

Requirements—Markings will include the producer's name or trade-

mark and a commercial designation. This designation will have a composition marking and a physical condition marking. Examples: Cold rolled will be CR; cold drawn, CD; aircraft quality, AQ, etc.

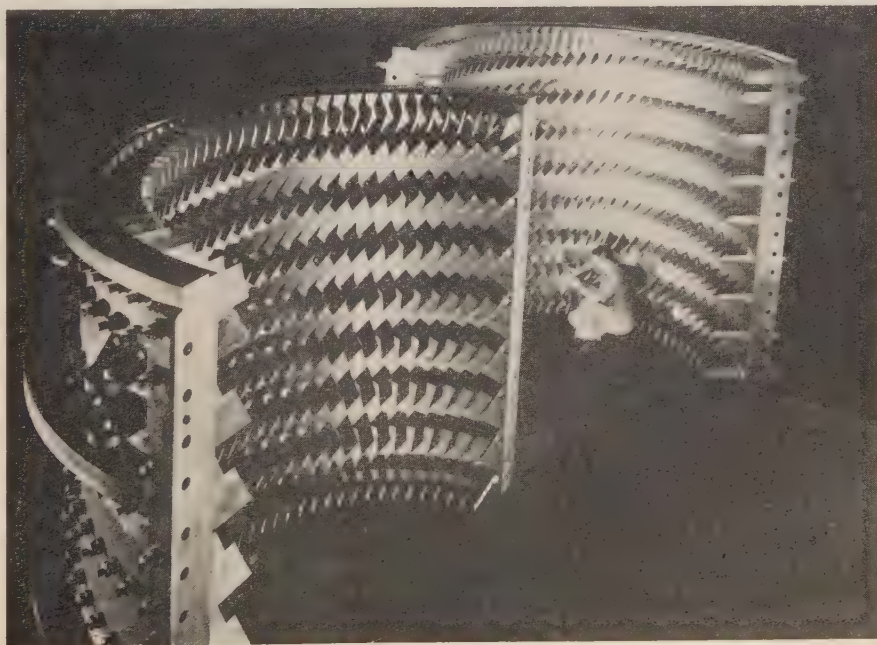
Section 2.2.3 reads: "The specification data shall include the number of the specification to which the metal was produced and the type, grade and class of the material, when applicable."

No Interference—The proposal also points out that physical markings will have to be placed on the iron and steel products in such a way that they will not hamper the function of finished parts.

Still up in the air is how manufacturers will mark their products. Some methods being considered are: 1. Offset printing. 2. Stamping each item. 3. Plastic tape.

Cyrus Eaton Looks Ahead

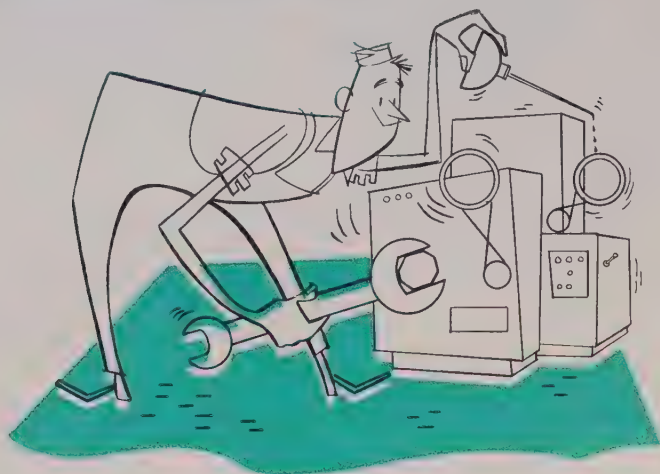
"Prospects for business are good through year-end." That's the belief of Cyrus Eaton, Cleveland industrialist and board chairman of Steep Rock Iron Mines Ltd., Ontario. Announcing that 1954 shipments of ore were 1.1 million tons, he reported that output could be upped to 5.5 million tons by 1957 if demand warranted.



Allis-Chalmers Mfg. Co.

Axial Compressor Rotor: To Help Test Jets

A 1-million-cubic-foot-per-minute axial compressor rotor will be installed in the Ram Jet Addition of the Arnold Engineering Development Center, Tullahoma, Tenn. When operating, the unit will simulate high altitude flight conditions, subatmospheric pressure and ultrasonic speeds encountered by jet aircraft



Mobilization Plans Get Checkup

THE NATION'S industrial mobilization machinery is getting a checkup.

There are no drastic changes coming—yet. For the present, the job will be to put a drop of oil here, tighten a bolt there. Here are some of the spots to receive attention:

Reporting—Last summer many requirements were eased for reporting on use of critical materials for defense. Look for the return of those requirements — probably within the next couple of months. Defense planners now think they relaxed too much last summer; the slack reporting, they believe, accounts for some of the bad guess-timates they have made on materials requirements for recent quarters.

DMS—Some 17 amendments currently are being considered for the Defense Materials System. None is revolutionary. Sample: One would put aluminum powder and foil on DMS.

DMS to CMP—More drastic are changes being polished up in case another Korea forces DMS to evolve into CMP (Controlled Materials Plan). DMS would probably continue for the first six months to a year of the conflict. Essential civilian programs would be put into it as they were readied.

Stand-by Controls — Although the President has said there's no need for them, watch for on-the-shelf controls on prices, production and wages when the Defense Production Act gets extended. The measure goes to the Hill early in April.

Aluminum — Another round of expansion is in the cards. The present tight supply situation has convinced defense planners that it's needed. Industry-men are willing, particularly since they are leery of too much dependence upon Canadian and other foreign production of ingots (see p. 124).

Stockpile — Watch for revised policies, such as more emphasis on tin, which we don't have, and less on aluminum, which we will have in ample quantities by 1958 when stockpile contracts expire. Watch, too, for more realistic stockpile specifications and for stocking materials in more usable form.

Depreciation Notes

Treasury's permanent regulations setting the ground rules for the new depreciation provisions of the Internal Revenue Act of 1954 should be ready in April. The preliminaries were out in January so that corporations could file their tax returns. . . That will be good news for defense contractors, especially. Section 15 of the Armed Services Procurement Regulation (dealing with depreciation costing) has continued to require the old straight-line depreciation, pending the permanent Treasury rules. Now, section 15 can get in step with the new provisions . . . Bulletin F, the Internal Revenue Service's schedule of useful lives for depreciation purposes, has been reprinted. Its schedules are exactly the same as the 1942 version.

Pentagon Patter

Question of the week: Where's Harold Vance? The Studebaker-Packard Corp. official was supposed to come to Washington at the first of the year to head the Vance Committee studying the mobilization base, especially regarding machine tools. But he hasn't shown up. A lot of decisions pend because of the delay.

The Air Force is considering doing more research on castings for jet-engine parts. In 1951, both the Air Force and the Navy let development contracts for that purpose, but results were inconclusive.

The Air Force contemplates a lot more research and development on metallurgy, electronics and propulsion. It will be partly basic and partly development work.



Meet Ray Bell: Director of the Electrical Equipment Division, Business & Defense Services Administration, Mr. Bell is on loan to the government from Allis-Chalmers Mfg. Co. (Under the plan, business people volunteer their services, without charge to the government, for six months or longer.) At Allis-Chalmers Mr. Bell is assistant to the vice president in charge of transformer and switchgear equipment. He has been with the company since 1936 when he graduated from Pennsylvania State University.

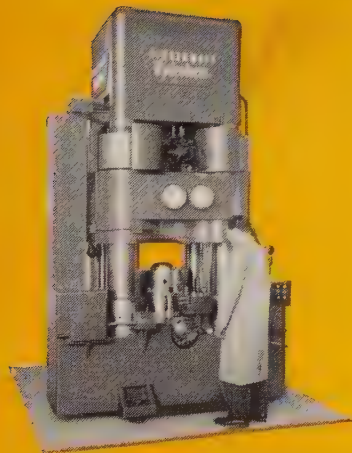
In Washington, he is in the Commerce building, room 4114. Telephone Sterling 3-9200, Ext. 2175.

two more examples of time and tool cost savings by Hydroforming



▲ PART A: Hydroformed in one operation from a 23" dia. blank of 0.051" aluminum.

PART B: Hydroformed in one operation from a 19" dia. blank of 0.032" aluminum.



The parts illustrated represent difficult, multiple-operation draws by conventional methods, using complicated and costly tooling. However, each part was produced in *one* draw by Hydroforming. *Minimum* tool cost was incurred. Part A was produced using a *plastic* punch. Part B was drawn with a *cast aluminum* punch. Two simple steel draw rings were the only other tool elements required. In both cases, finished part samples were submitted for engineering approval after just *two hours* development time on the machine.

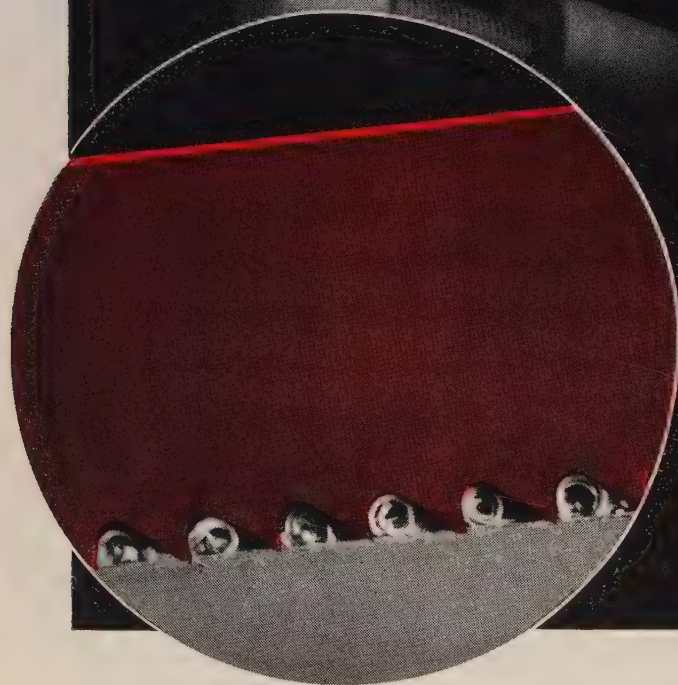
Similar savings can be *yours* by Hydroforming. Let a Cincinnati Milling field engineer give you complete details. For a description of the Hydroforming process and specifications of the 8", 12", 19", 23", 26" and 32" machine sizes, write for Bulletin M-1759-3.



Hydroform

PROCESS MACHINERY DIVISION
THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U.S.A.

More Mileage Here



Starts Here with a SIMONDS **"RED END"** POWER HACK-SAW BLADE

What makes a "Red End" Blade cut better, last longer on the average than other blades? The answer's in the picture. Every "Red End" tooth takes exactly the same bite, curls the chip like a cutting tool on a lathe.

Because every tooth in every "Red End" Blade is exactly the same. It's all in the way we pour and roll our own steel . . . the way we mill the teeth to exact size and shape . . . set them evenly and accurately . . . and the special way we heat-treat them to a *uniform* hardness never believed possible before.

The result is *faster, straighter* cutting, and *many more* cuts per blade. If you haven't tried them yet—your local Industrial supply Distributor stocks 'em. Get some today and see.



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SIMONDS
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There's a **RED END** Blade
For Every Job



HIGH SPEED MOLYBDENUM — the **RED** Blade
for cutting mild alloy steels and general pur-
pose use.



HIGH SPEED TUNGSTEN — the **GREY** Blade
for cutting hard alloys and stainless steels.



HIGH SPEED WELD-EDGE — the **SHATTERPROOF**
Blade for use where maximum safety is re-
quired.

U.S. Boosts Foreign Investment

Value of our stake in overseas manufacturing rose almost \$1.5 billion from 1950 through 1953. Canada has biggest share. Latin America, Western Europe battle for second

FOREIGN INVESTMENT is becoming increasingly attractive to U. S. manufacturers.

From 1950 through 1953, a report by the Machinery & Allied Products Institute shows, the value of investments in foreign manufacturing enterprises jumped 37 per cent, from \$3.8 billion to \$5.2 billion.

Why—Gains stem in part from value, in part from governmental stimulation. (From 1950 through 1953, foreign earnings, expressed as a percentage return on investment, varied between 13 and 17 per cent.) Uncle Sam is encouraging foreign governments to provide concrete incentives to attract U. S. capital, and the administration is pushing tax reductions on earnings and a broader investment guarantee program.

The MAPI breakdown shows Canada is the most important area for foreign investment. U.S. holdings rose to \$3436 million by 1953, or about 46 per cent of the world total.

Race—Latin America and Western Europe are running neck and neck for second place. Before 1940, Western Europe was unchallenged. But World War II diverted the capital flow to Latin America. Between 1940 and 1953 the value of U. S. manufacturers' holdings there increased five times. Latest figures spot interests in Latin America at \$1139 million, in Western Europe at \$1299 million.

About 75 per cent of Latin American investment is shared by Brazil, Mexico and Argentina. Colombia, Chile, Cuba and Venezuela take the rest. In Western Europe, about 63 per cent of holdings are in the United Kingdom; the remainder in Belgium, France, Germany and the Netherlands.

Other Countries—Canada, Latin America and Western Europe together have by far the biggest part of the manufacturing investment dollar. By the end of 1953, total holdings for the rest of the world

were only \$368 million. But they, too, are showing growth. Since 1950, \$45 million has been added each year, with the bulk going to Australia, Union of South Africa and the Philippines. Some expansion is also going on in India, New Zealand, Egypt and Japan.

Gross incomes are increasing right along with total investment values. Since 1936, they have more than doubled, from \$305 to \$667 million. Based on interest and dividends paid to U. S. investors expressed as a percentage of gross incomes, the profit pattern has been quite stable. Aside from 1950, when it was 56 per cent, an average of 48 per cent has been paid out annually.

Payoff—The regional breakdown shows Canada up as best bet. U. S. investors have received an average of 58 per cent over the last four-year period from Canadian holdings. Investors in Latin America have been paid an average of 48

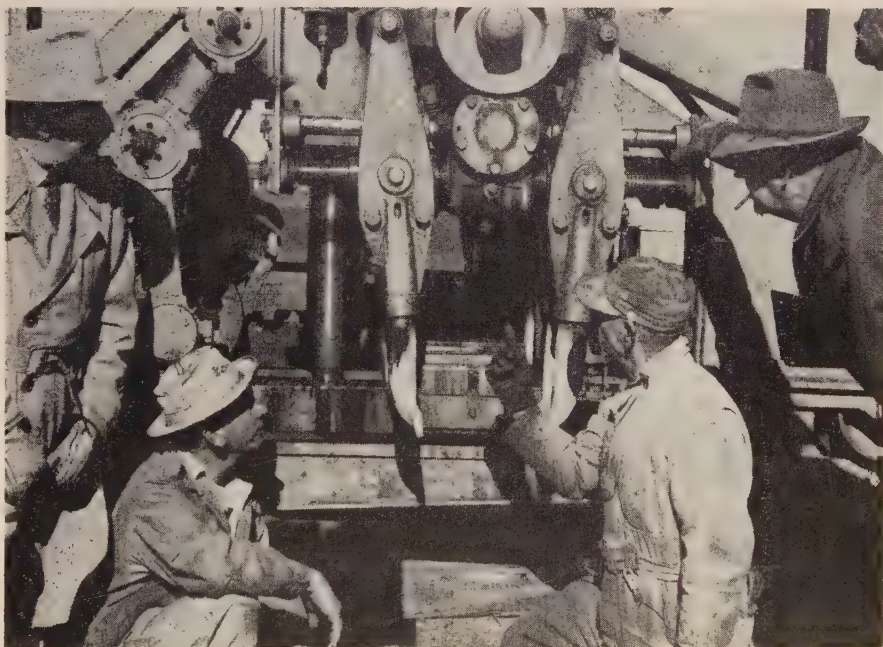
per cent, investors in Western Europe have had 37 per cent. However, their yield has been low—not only because of exchange controls, but because many of them have chosen to retain their earnings abroad.

Taxes — One reason for Latin America's growing attraction for investment dollars can be found in the tax levels of the three major areas. In 1950, Latin American investors had to pay by far the lowest portion of earnings in foreign income taxes (24.1 per cent). In Canada the level was 41.3 per cent, in Western Europe 48.1. Average for all areas was 40.9 per cent.

Preliminary data show that U. S. dollars are continuing to pour into foreign manufacturing enterprises at a high rate. By 1960, it is estimated that holdings may be worth as much as \$7 billion.

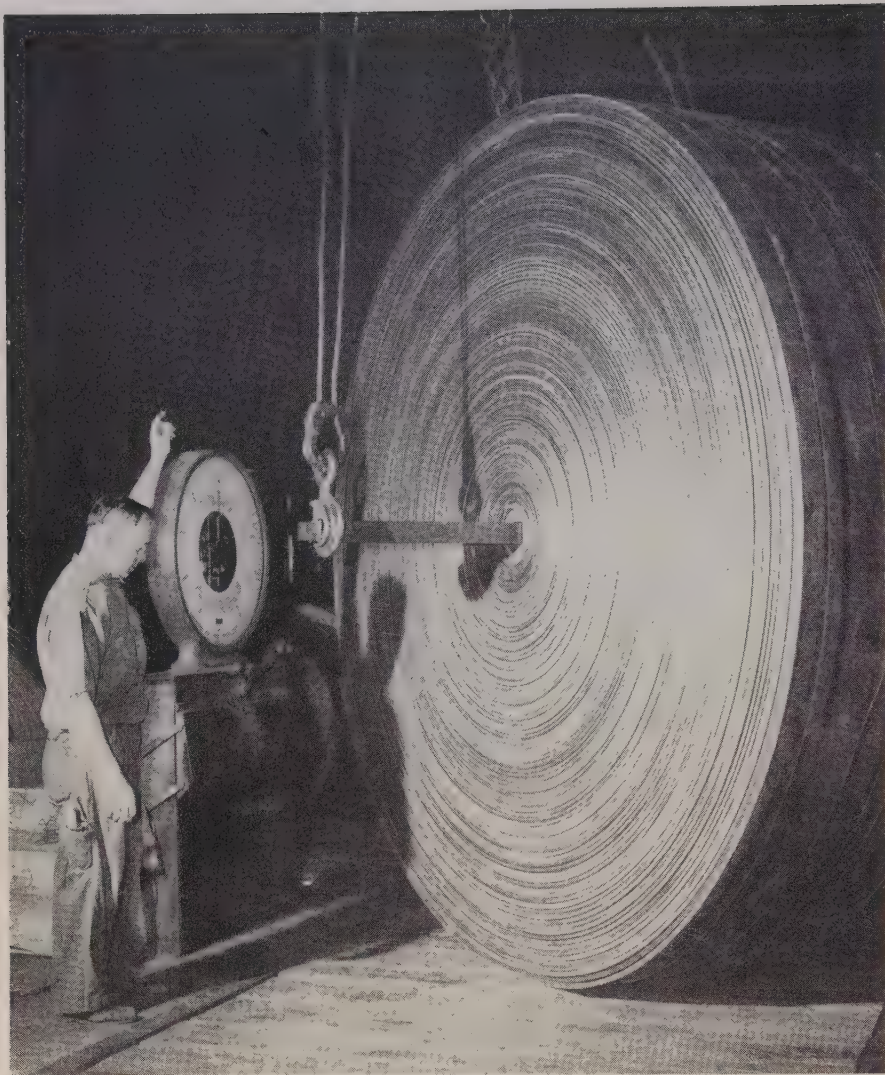
Steel Mill for Pakistan

Pakistan may build a \$300-million iron and steel mill. A Krupp survey team from Germany has found ore deposits in the Punjab estimated at 250,000 tons annually, and expects to turn up more. The Industrial Development Corp. will seek to finance the project by loans from the World Bank and foreign private enterprise.



Swiss Equipment for U. S. Railroads

Swiss-built Matisa tamper is now packing ground for the Atchison, Topeka and Santa Fe Railroad. Four blades surround each rail, penetrate the ballast, vibrate it to new positions and then pack it securely under the ties. Jacks are used with the machine to raise the tracks. Operation is semiautomatic



U. S. Rubber Co.

Sales will roll to \$600 million in '55 as . . .

Rubber Goods Get New Bounce

PREDICTION FOR 1955: There will be new bounce in industrial rubber goods sales. Reports from leading manufacturers indicate that volume will be over \$600 million, with belting and hose products leading the parade.

Sales will rise about 6 per cent in '55. This is based on several factors: 1. National defense spending will remain constant at about \$44 million. 2. Automobile production will be up. 3. The general business index indicates an overall higher level for 1955.

Purchasers—Major consumers of industrial rubber goods are the automotive, aircraft, appliance, mining, chemical, machinery, oil, paper, power, metals and textile industries. An indication of the importance of the automotive in-

dustry as a consumer is gained from the fact that there are over 350 nontire rubber parts in modern cars.

The \$600 million breakdown will fall into four major categories: Hose, \$160 million; belting, \$135 million; molded and extruded goods, \$225 million; and a miscellaneous category, which includes mats and matting, packing etc., \$80 million.

Peak Year—Use of natural and synthetic rubber reached an all time high in 1953, with a total of 1,338,000 tons being consumed. Consumption was down to 1,233,000 tons in 1954, but rubber manufacturers are estimating that 1,330,000 tons will be used in 1955, with a 50-50 chance that the 1953 record will be equaled.

Thomas Robins Jr., president, Hewitt-Robins Inc., says: "The outlook is especially good for conveyor belting. Mines, mills and factories almost everyday are discovering new ways to cut cost through use of belt conveyors." New developments by the conveyor industry in the use of the continuous belt for transportation are also lending impetus to the predictions for a good year.

Case History—Goodyear Tire & Rubber Co.'s St. Marys, O., plant is an example of how manufacturers must be able to provide service and industrial know-how. Currently, the plant is producing some 3000 parts. Items range from small parts weighing 1 ounce, such as a gasket seal for a model airplane carburetor, to huge press pads weighing hundreds of pounds. Production floor space has grown from less than 100,000 square feet in 1940 to 500,000 square feet. Because of the diverse nature of many of the products manufactured, the plant is always tooling up and tearing down. The company operates a complete machine shop to furnish the steel dies and molds for the molding and extruding machines.

The profit margins on many industrial rubber products in 1954 were extremely low owing to intense competition which forced selling prices down. Indications are that prices will not be lowered and in general may rise slightly during 1955.

A Challenge—Most producers feel that the industrial rubber goods market is a tough, service-type business, but one that is growing in stature and importance as the nation's economy grows and as the trend toward automation continues.

\$200 Million in Ore Reserves

Ore has been discovered on 250 projects. Indicated reserves of the 169 which have been certified are valued at \$200 million by the Defense Minerals Exploration Administration; additional certifications are expected after an evaluation of ore showings.

Applications for exploration assistance in the fourth quarter of 1954 had a total estimated cost of nearly \$6 million.

Consumers Will Spend More in '55

Outlays should run somewhat above last year's all-time high. Housing boom will continue if easy terms remain available. Auto buying will be about same as in 1954

CONSUMERS are optimistic about 1955. That's a good sign in this period of industrial recovery. It means that consumer spending, one of the few rocks of Gibraltar in last year's backsliding picture, could surpass the record \$234 billion spent in 1954.

Consumers plan to buy more homes, furniture and appliances. More plan home improvements. Automobile buying plans are about the same as a year ago.

Good Times—Confidence is high that 1955 will be a good year. The over-all economic situation is looked at more favorably than a year ago and about the same as in 1953, according to preliminary results of a survey of consumer finances by the Federal Reserve Board.

About 60 per cent of consumers expect good times this year, compared to only 40 per cent a year ago. About 40 per cent expect to be making more money a year from now.

More Houses—As far as buying plans go, more consumers plan to buy or build houses this year, adding strength to builders' confidence in the housing boom. More consumers are planning to buy than in either 1954 or 1953. Veterans are largely responsible.

Many buying plans apparently hinge on continuing easy mortgage terms, though. But until money tightens up, the house builders will find a ready market. This is indicated by the number of consumers planning to build or buy in 1956—about the same as those who had longer range buying plans in the preceding three surveys.

Autos Steady — The number of consumers planning to buy cars is about the same as a year ago. New car sales will run a little under 6 million, somewhat below latest Detroit estimates.

But consumers will be spending more for the cars they buy. For

example, those planning to buy a new car say they'll spend on the average about \$2800, an all-time high. Last year the average was \$2500. The used car picture is about the same. But here volume and the amount spent will be up slightly. Sales should run to perhaps 8.5 million or more. Consumers plan to spend about \$860, compared with \$760 last year.

Appliances Hold—More consumers are planning to buy furniture and major household appliances, but, individually, they are planning to spend a little less. The net result will be about the same as 1954. That means sales of some 4.5-million home-laundry appliances, 3.1-million ranges, 3.3-million refrigerators, 7.4-million TV sets.

Spending for home improvements will be up this year. As in early 1954, about one-third expect to spend \$500 or more.

Higher Incomes — Several aspects of the survey show the ef-

fects of last year's business fall-off. Somewhat fewer consumers report incomes larger than a year ago. The proportion reporting smaller incomes is about the same as in early 1954. •

But consumers are optimistic about income prospects this year. A larger percentage of spending units expect bigger incomes. Only a small percentage expect to be making less. Favorable income expectations appear to be shared by all income and occupational groups.

Steel Payroll Cost Rises

Wage earners in the iron and steel industry were paid an average of \$2.392 an hour in January, reports the American Iron & Steel Institute. This was a return to the record high level of November, 1954. The average for December was \$2.372; yearly average for 1954 was \$2.333.

The average hourly employment cost in January, including the estimated cost of pensions, social security and insurance, was \$2.571, compared with \$2.551 in December, 1954.

Wage earners worked an average of 37.8 hours a week during January, compared with 38 hours a week during December.

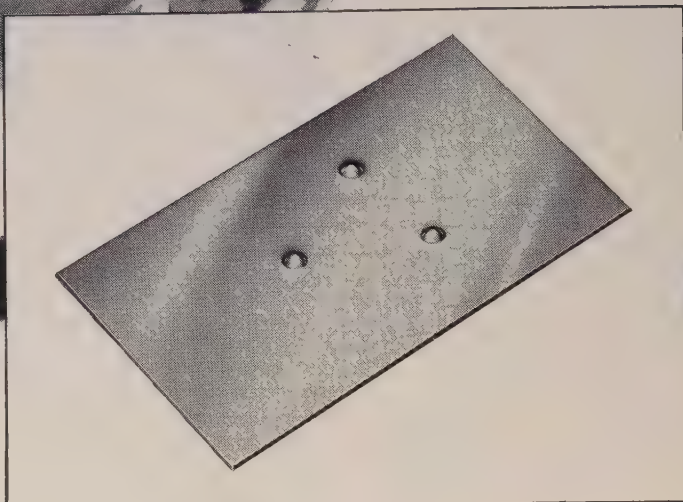
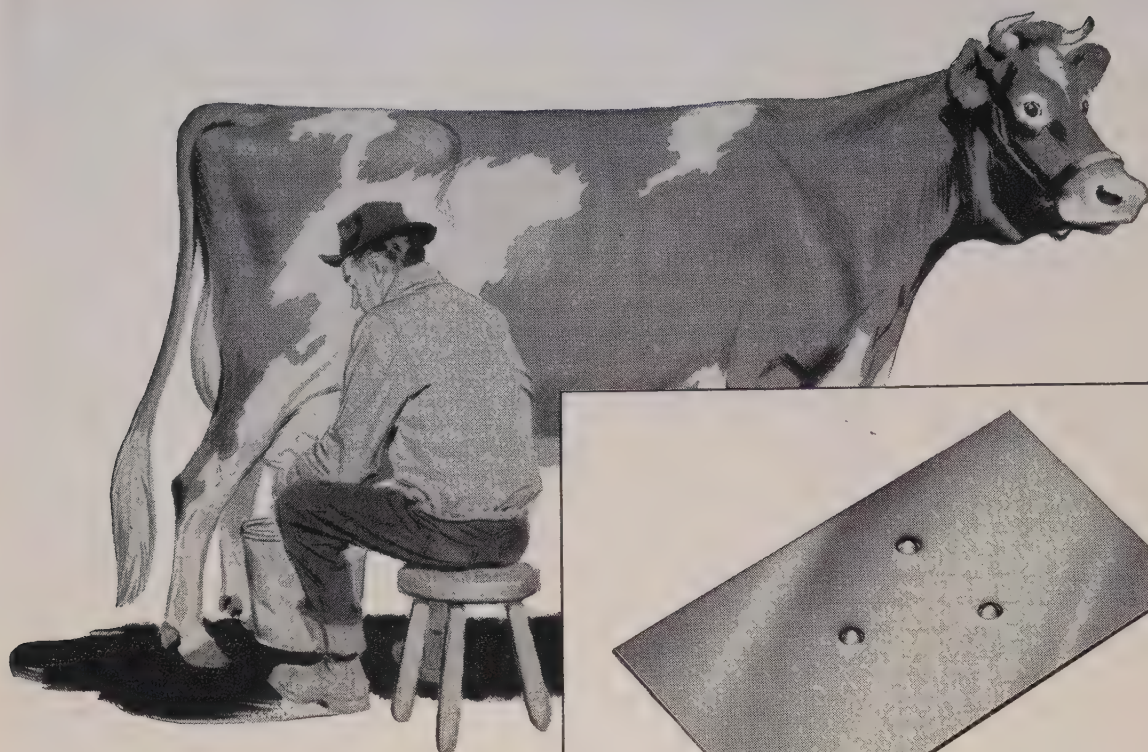
This percentage of consumers in 1955 will buy:*

	1955	1954	1953	1952	1951	1950
Houses	9.6	6.6	8.8	6.4	8.5	8.4
Home improvements and maintenance	22.7	19.6	16.9	n.a.	n.a.	n.a.
New automobiles	7.6	7.9	9.0	6.8	6.6	10.6
Used automobiles	7.2	6.5	6.2	6.0	5.5	6.9
Furniture and major household appliances	28.7	26.9	31.9	23.2	27.4	28.4

They'll spend an average of:*

	1955	1954	1953	1952	1951	1950
New automobile	\$2,800	2,500	2,500	2,300	1,970	1,920
Used automobile	\$ 860	750	900	600	590	540
Furniture and major household appliances	\$ 290	300	300	290	300	290

Source: Federal Reserve Board.
*preliminary. n.a.=not available.



The bumper mount and the 3-legged stool

**A case history of interest
to any manufacturer who uses
flat-rolled steel.**

A little piece of steel like that shown above serves as an automobile bumper mount. Originally, this mount was to be projection-welded to the bumper at each of four points. But during the welding process, at the supplying manufacturer's plant, one point of the mount either refused to take the weld, or it broke easily under strain.

Time was running out. Production lagged and costs skyrocketed. And then a Great Lakes Steel Technical Service Representative was called in. He discovered that, regardless of how flat the rectangular mounting might be, it was virtually impossible to get a strong projection weld at all four corners. But when he eliminated one weld, the plate snuggled into the bumper and made perfect contact on three points—just like a three-legged stool! Three welds were actually stronger than four.

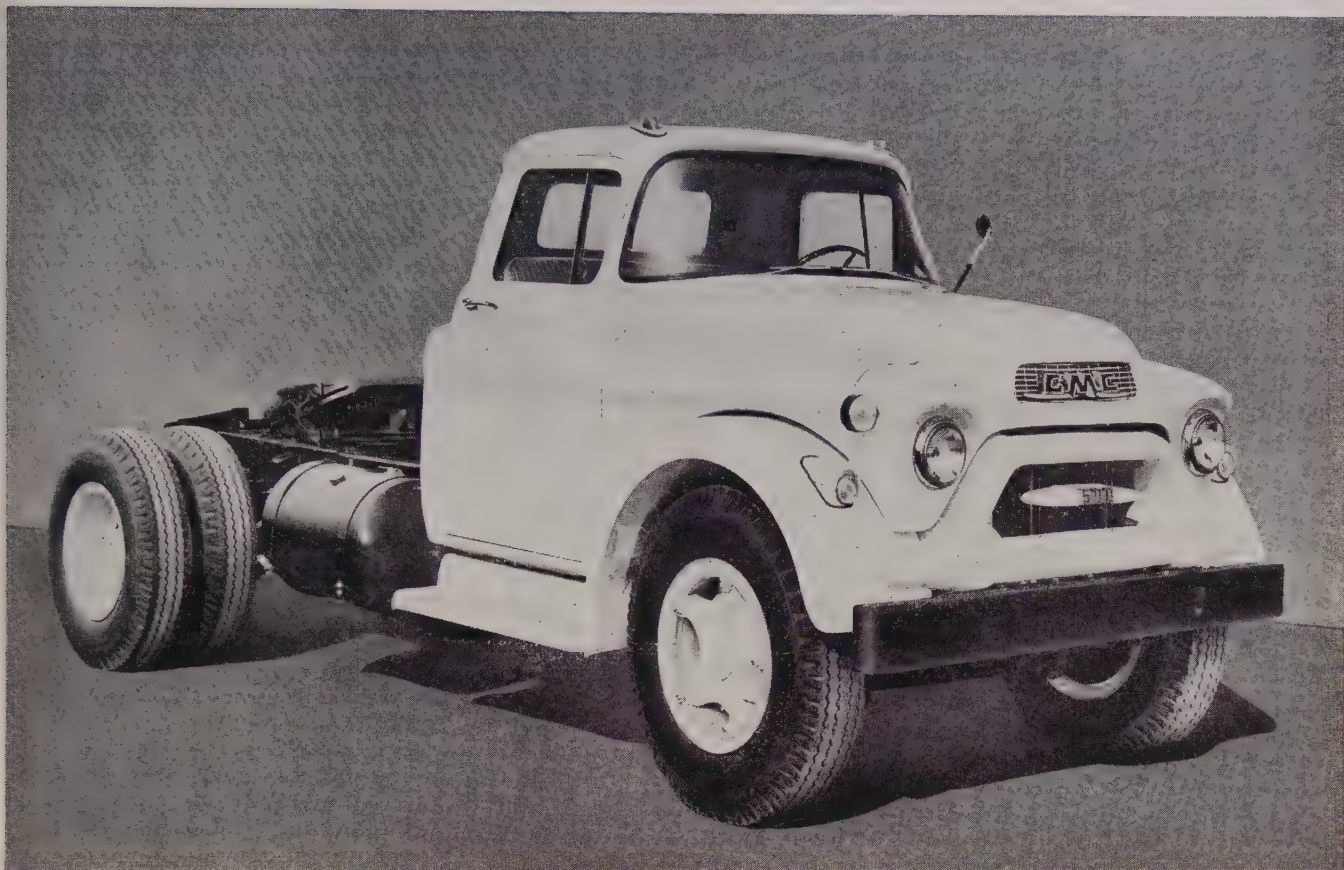
Solving problems is a tradition at Great Lakes Steel. As specialists in flat-rolled products, Great Lakes has had to come up with the right answers to problems in many fields. It will pay you to take advantage of this reservoir of experience next time you have a problem that concerns flat-rolled steel.

GREAT LAKES STEEL CORPORATION
Ecorse, Detroit 29, Mich. • A Unit of

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SALES OFFICES IN BOSTON, CHICAGO, CINCINNATI, CLEVELAND, HOUSTON, INDIANAPOLIS, LANSING, LOS ANGELES, NEW YORK, PHILADELPHIA, PITTSBURGH, ROCHESTER, ST. LOUIS, SAN FRANCISCO AND TORONTO



This GMC 500 is 12 in. shorter than previous models

Trucks Gain on Autos

"THIRTY MILLION trucks in 1975." That's the estimate of P. J. Monaghan, General Motors Corp. vice president and GMC Truck & Coach Division general manager.

Coming out of a new model announcement, this statement has an impact best appreciated by a quick review of the status quo. According to the Automobile Manufacturers' Association, there are only about 19.8 million trucks in the world today. The United States has about half, or 9.6 million.

Triple—Thirty million trucks registered in this country would be three times as many as we have on the road today, 50 per cent more than the current world total. More importantly, to accomplish the feat in just 20 years would insure a production rate of a million units a year if no trucks ever left the road as scrap. With the bulk of trucks

ready for retirement with ten years' service or less, that means an annual truck production of 3 to 4 million units to arrive at the 30-million figure for 1975.

Pointing out that the trucking industry already is growing at three times the rate of the passenger car industry, Mr. Monaghan feels confident in his prediction that it will triple in size over the next two decades. Although the GMC division predicts sales of only 950,000 units for truckmakers in 1955, compared with over a million in 1954, Monaghan sees the upswing starting in 1955 as replacement of trucks sold immediately after World War II lends impetus. Also contributing to the acceleration of the trucking industry's growth will be engineering and design changes now in the works, he believes.

Style Talk—Indicative of the

trend is more talk of truck styles this year than perhaps ever before. GMC reports "speedline styling" with "picture window" visibility and a "jet stream airscoop" on the hood. Chevrolet hits the snazz gong with the "cameo carrier" pickup unit. Plastic panels bolted onto a pickup provide the key to this interesting experiment.

"Truck style has a deeper significance than passenger car style," believes Mr. Monaghan, "... it can even affect accident rates and maintenance expense. We are aware that millions of trucks are used part time in passenger car service, especially in small towns and rural areas, so that truck comfort, convenience and style should carry the same weight with their owners that they do in the selection of their passenger cars." Statistics indicate almost one-third of all trucks are used on farms.

Going Automatic—In addition to style, use of automatic transmissions on trucks is an interesting

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trend. Mr. Monaghan believes that used trucks without automatic transmissions are going to take a drop in trade-in values comparable to passenger cars in three to four years. Coupled with other improvements in the industry's products, he believes automatic transmissions have the potential to make an annual savings of more than \$2 billion. That means a 10 per cent improvement in the efficiency of trucks, which now carry 200 billion ton-miles of freight annually.

Models on which GMC is making its automatic transmission available are up to 65 for 1955, compared with 13 in 1954. Also new for 1955 is a pair of V-8 engines available in 44 of the 128 models offered. They are rated at 155 and 175 hp. All six-cylinder engines have been raised in power, topped by the 503 engine rated at 225 hp. Another interesting engineering development is the "hold" position in the eight-speed Hydramatic transmission for medium and heavy-duty trucks. This prevents the transmission from upshifting, permits using the engine as a brake for descending long grades.

Chevy Lineup—Chevrolet announces 75 models on 15 wheelbases in the 1955 lineup, an increase of four wheelbases over 1954. Most wheelbases have been reduced and the cab-over-engine has been replaced with the "low-cab-forward." Convenient entrance and exit from the cab and easier servicing are claimed for the design, while the trailer-length advantages of the cab-over-engine design are retained. A new V-8 engine is supplied on this series as standard equipment.

Power steering and power brakes are offered on all models, with Hydramatic as an option on light and medium duties. Two-tone interiors are making use of new and airy synthetic fabrics which will be available on both deluxe and custom cabs. Improvements in seats as well as ventilation and visibility insure a higher degree of driver comfort than ever before.

Dealer Profits Drop

As the U. S. auto industry sets records with monotonous sensationalism, the National Automobile Dealers Association announces that

operating profits for new car and new truck dealers are the worst in 15 years. Heavy losses in the fourth quarter drove the average down from 1.7 per cent at the end of September to 0.6 per cent for the entire year.

To find a worse year, it is necessary to go back to 1939 when the ratio of net profit to net sales for incorporated automobile dealers was 0.4 per cent. And 38.7 per cent of the dealers included in the NADA survey for 1954 reported an operating loss for the year.

It's a matter of common sense that dealers who don't make money are going to get into some other business. Thus the problem: Will sales battles result in wrecked dealer organizations, which, as the actual end of the auto distribution system, could result in the undermining of the industry?

The minimum result seems the coming of bigger auto dealerships, with more capital and ability to survive on a slim unit margin.

Exhaust Notes

If you've been rebelling against the paint-splattered world of motordom these days, brace yourself. The latest is colored tires now in

volume production by U. S. Rubber Co. A glorious climax to 40 years of research, the tires are now being produced in blue, green and brown to test public reaction to the flashier shoes. The tires have a narrow whitewall next to the colored rim which matches the main colored wall. Only the tread remains black in the product, which sells for about \$16 higher than conventional tires. Now watch for some joker to bring out colored tire paint.

Also in the rubber department is a Goodyear Tire & Rubber Co. announcement that the firm will build a new tire plant in Venezuela with an initial capacity of 500 tires per day.

Pontiac announces a four-barrel carburetor unit which increases the horsepower output of the V-8 from 180 standard to 200. Consisting of a four-barrel carburetor, suitable intake manifold and heavy-duty air cleaner, the unit is available on all models through the factory at present.

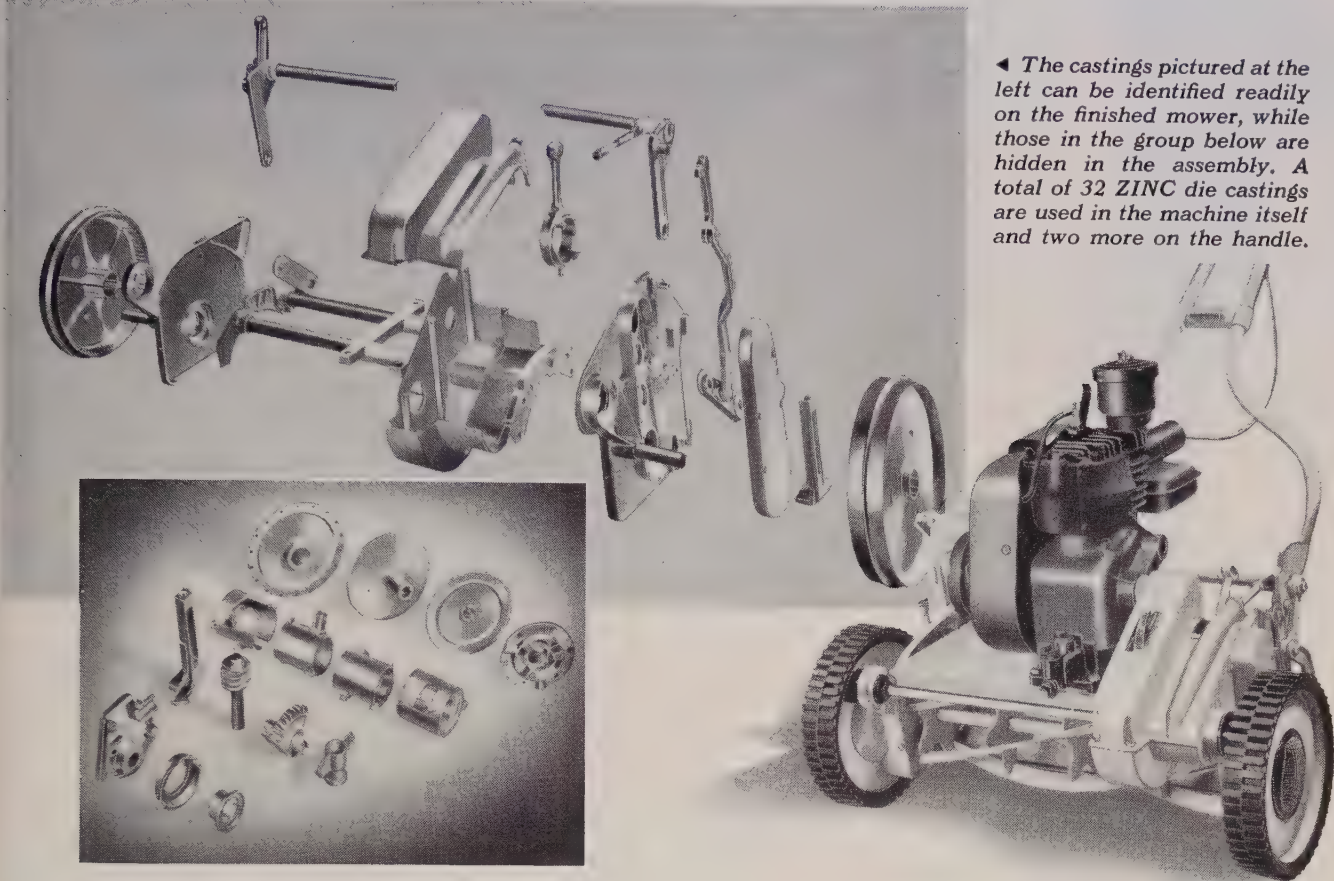
An automatic headlight dimmer is available on 1955 Lincolns and Mercurys as a factory-installed accessory. With an adjustable sensitivity selector, the unit utilizes a sensing head, amplifier and relay in dimming the beam. No additional foot switch is required for the driver to over-ride the operation of the dimmer.

Dabblings in plastic, which include the Corvette, special tractor-trailer rear fender and the cameo-carrier, truck side panels described above, now include plastic sheet metal repair kits. Useful in patching torn or rusted body parts, exhaust pipes, manifolds and gas tanks, the material reduces repair costs on used cars 60 to 75 per cent.

The mixture of epoxy resins with glass fiber reinforcement is virtually impossible to separate from the metal once the material has set—despite temperature decreases to 50 degrees below zero, followed by application of heat lamps. Preparation of the metal surface includes sanding, chemical cleaning and drying.

The implications of this development in many fields of metal-working could be extremely far reaching.

Auto, Truck Output		
U. S. and Canada		
	1955	1954
January	780,780	594,467
February	770,591†	574,215
March		672,485
April		676,248
May		621,262
June		623,732
July		543,540
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,884,616
Week Ended	1955	1954
Feb. 19	198,066	148,257
Feb. 26	195,079	145,980
Mar. 5	192,892	139,263
Mar. 12	203,149	143,478
Mar. 19	211,778	154,895
Mar. 26	213,000*	149,562
Source: Ward's Automotive Reports.		
†Preliminary. *Estimated by STEEL.		



◀ The castings pictured at the left can be identified readily on the finished mower, while those in the group below are hidden in the assembly. A total of 32 ZINC die castings are used in the machine itself and two more on the handle.

toughness — as proved by **CLEMSON**

In designing the new reel-type "Power Drive" mower, Clemson Bros., Inc. has employed ZINC die cast components wherever possible—with full assurance of their durability. Behind this decision lies over 15 years of outstanding performance of ZINC die castings in Clemson's well-known hand mower. And the use of this metal and method of production not only insures efficient, dependable service, but provides smooth surfaces for a finished appearance that could not be matched at comparable cost by any other means of manufacture.

The impact strength of ZINC die castings exceeds that of the other commonly used die casting alloys. And this ability to withstand sudden shock is only one of the strength characteris-

tics which account for the preference for ZINC. Outstanding in tensile and compressive strength, as well as in ductility and hardness, ZINC die castings get the call where *toughness* is an important consideration.

High strength is just one of the many reasons why ZINC rates first in die casting. We suggest that you watch these pages in the months ahead for other examples of ZINC die casting advantages in product design. In the meantime, send for our new brochure and contact any commercial die caster for assistance in solving your particular production problems.




The New Jersey Zinc Company
160 Front St., New York 38, N. Y.



ZINC
FOR DIE CASTING ALLOYS

The Research was done, the Alloys were developed, and most Die Castings are based on
HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC



Here's a bolt whose weakness is its strength!

Making a bolt that fails precisely when it should requires specialized manufacturing skills.

This is the job New Holland Machine Company, farm equipment manufacturers, turned over to RB&W. The bolt is used on the flywheel of a New Holland baler. "Critical" is a weak word for its importance to the baler.

If the baler picks up a foreign object such as a rock or stone, this bolt *must* snap to prevent gear breakage. But it can't fail too soon—when the baler eats up extra-heavy windrows, for example. If it failed every time this happened, the farmer would spend all day replacing bolts — instead of making hay.

RB&W worked hand-in-glove with New Holland engineers in the tough job of heat-treating a standard machine bolt to these exacting specifications. It took a lot of ingenuity — but paid off. You can expect the same kind of service, cooperation and end product when you drop your fastener problem in our hopper. RUSSELL, BURDSALL & WARD BOLT AND NUT CO., Port Chester, N.Y.



UP TO TWELVE TONS OF HAY AN HOUR is the capacity of New Holland's Super 77 power take-off baler. With every minute vital in harvesting, farmers can't take

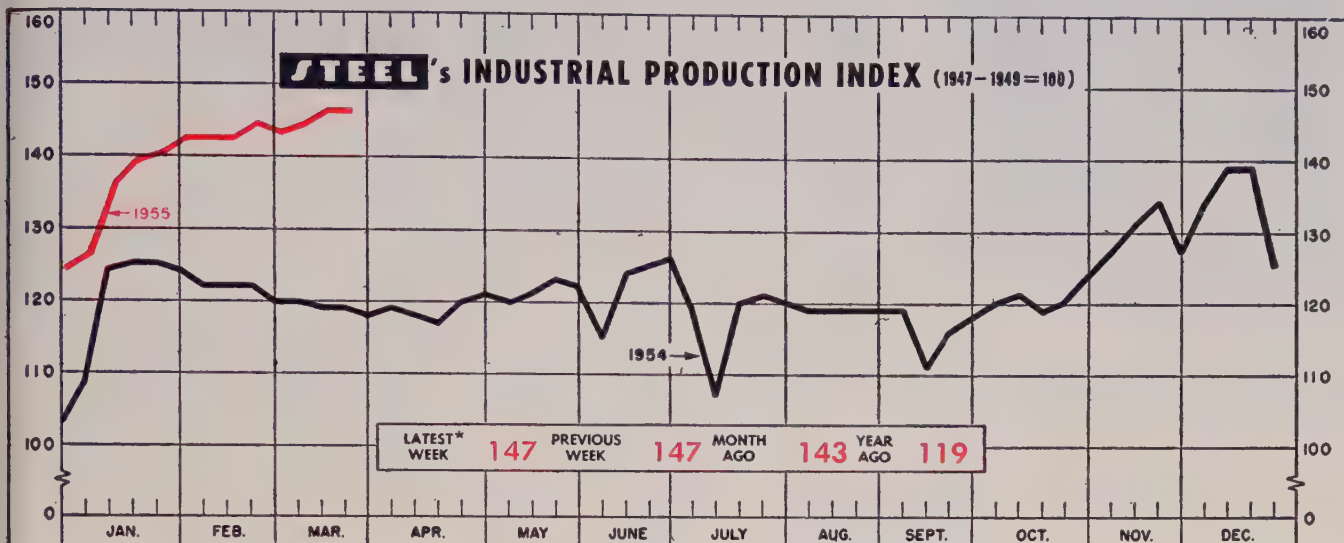
chances on machinery failure — so New Holland built rugged parts into the Super 77, gave it extra-large capacity for fast, reliable operation.

RB&W

RUSSELL, BURDSALL & WARD

110 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Plants at: PORT CHESTER, N.Y.; CORAOPOLIS, PA.; ROCK FALLS, ILL.; LOS ANGELES, CALIF. Additional sales offices at: ARDMORE (PHILA.), PA.; PITTSBURGH; DETROIT; CHICAGO; DALLAS; SAN FRANCISCO. Sales agents at: NEW ORLEANS, DENVER, SEATTLE. Distributors from coast to coast.



*Week ended Mar. 19. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%.

Metalworking: Going Strong Into Second Quarter

WHERE she stops nobody knows . . . STEEL's industrial production index has climbed almost continuously since the start of 1955. Now it's at 147 (1947-1949=100), up almost 30 points from a year ago and 8 points above the all-time high set in mid-1953.

Present indications are that it will get even closer to 150 before summer. Reasons: Steel output will likely continue above 90 per cent of capacity into the second quarter. Auto producers seem determined to keep up the present record-breaking pace. Freight car loadings normally trend upward through the second quarter. Electrical output usually heads downward with the advent of warmer weather and longer days, but higher industrial activity will buoy consumption this year. Those four items are the bases of STEEL's index.

Booked Up—Steel production has been above 90 per cent of capacity since the first week in March. There is little reason to suspect the rate will drop below the 90-per-cent mark soon. Mills are already booked up through the second quarter on many items. It's also unlikely that the rate will go much above 95 per cent, mainly because that would involve use of less efficient equipment.

Ingot output last week was es-

timated at 92.5 per cent of capacity by the American Iron & Steel Institute. That means production of about 2,240,000 net tons, which would have been just a shade under 100 per cent of capacity in 1953, the industry's highest production year.

Output Gains—Two weeks ago, production was at 94.2 per cent

of capacity. The 2,273,000 net tons produced was the highest weekly total since the early second quarter of 1953.

Autos are just finishing up a record first three months that will see some 2.1 million cars turned out, an all-time high for a quarter. Production schedules are being turned upward for the coming

BAROMETERS OF BUSINESS

INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1000 net tons) ² . . .	2,240	2,273	1,624
Electric Power Distributed (million kwhr) . .	9,720 ¹	9,726	8,572
Bitum. Coal Output (1000 tons)	8,300	7,740	7,105
Petroleum Production (daily av.—1000 bbl.)	6,825 ¹	6,845	6,461
Construction Volume (ENR—millions) . . .	\$374.8	\$358.2	\$215.4
Automobile, Truck Output (Ward's—units) .	211,778	204,285	154,895

TRADE

Freight Car Loadings (unit—1000 cars) . . .	670 ¹	667	610
Business Failures (Dun & Bradstreet, no.) .	230 ¹	257	243
Currency in Circulation (millions) ³	\$29,801	\$29,186	\$29,709
Dept. Store Sales (changes from year ago) ³	+11%	+15%	-8%

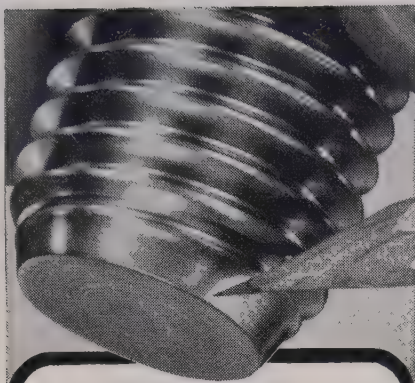
FINANCE

Bank Clearings (Dun & Bradstreet, millions)	\$21,001	\$18,710	\$20,232
Federal Gross Debt (billions)	\$278.2	\$278.5	\$274.9
Bond Volume, NYSE (millions)	\$18.4	\$19.0	\$16.5
Stocks Sales, NYSE (thousands of shares) .	14,528	16,211	8,934
Loans and Investments (billions) ⁴	\$84.2	\$84.4	\$79.7
U. S. Gov't. Obligations Held (billions) ⁴ .	\$34.2	\$34.6	\$32.3

PRICES

STEEL's Finished Steel Price Index ⁵	194.53	194.53	189.74
STEEL's Nonferrous Metal Price Index ⁶ . .	227.3	227.3	209.3
All Commodities ⁷	110.0	110.1	110.6
Commodities Other Than Farm & Foods ⁷ . .	115.5	115.5	114.3

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

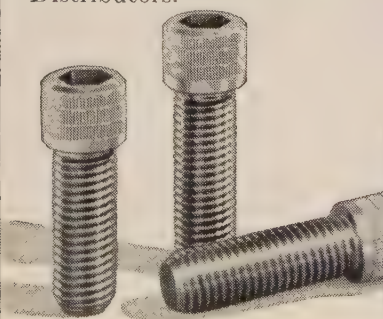


TOUGHER!

Allen

LEADER POINT CAP SCREWS

Dropping, knocking against metal surfaces and faulty line-up are major causes of damaged threads. Allen's new unthreaded leader point substantially reduces the causes of screw thread injury, or damage to threaded holes. Grip Heads, precision fit sockets that adhere to the key, *plus* the new leader points, make Allens the world's easiest starting cap screws, particularly in inaccessible spots. Sold *only* thru leading Industrial Distributors.

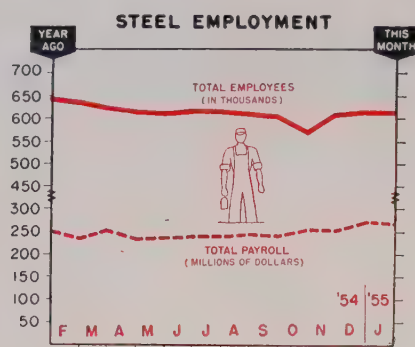


ALLEN

MANUFACTURING COMPANY
Hartford 2, Connecticut, U.S.A.

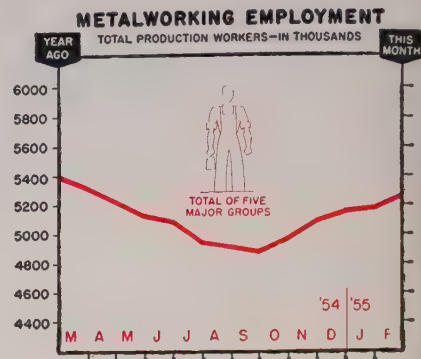


THE BUSINESS TREND



	Employment in Thousands		Payroll in Millions	
	1955	1954	1955	1954
Jan.	602	645	\$257.9	\$251.3
Feb.	636	636	236.6	236.6
Mar.	621	621	249.7	249.7
Apr.	609	609	232.6	232.6
May	606	606	234.4	234.4
June	609	609	236.4	236.4
July	608	608	232.8	232.8
Aug.	601	601	238.8	238.8
Sept.	597	597	234.6	234.6
Oct.	596	596	244.7	244.7
Nov.	599	599	247.7	247.7
Dec.	605	605	262.2	262.2

American Iron & Steel Institute.
Charts Copyright 1955 STEEL.



	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mch'y.	Trans. Equip.
1954					
Feb.	1,027	864	1,220	839	1,435
Mar.	1,010	852	1,202	827	1,409
Apr.	991	840	1,187	811	1,380
May	976	833	1,165	791	1,342
June	983	831	1,151	776	1,324
July	969	809	1,108	765	1,277
Aug.	968	819	1,093	782	1,237
Sept.	965	820	1,095	802	1,184
Oct.	969	829	1,091	817	1,246
Nov.	988	845	1,091	828	1,324
Dec.	1,002	844	1,106	827	1,365
1955					
Jan.*	1,011	834	1,112	815	1,389
Feb.*	1,032	845	1,137	818	1,409

*Preliminary.
U. S. Bureau of Labor Statistics.

quarter. Planned are some 2.2 million units, according to *Ward's Automotive Reports*.

Ward's projections show all producers, except Chrysler and Kaiser-Willys, are planning to exceed first-quarter outturn. Percentage-wise, the biggest boost is at American Motors, which expects to step up production almost 50 per cent.

Strikes Would Upset Plans . . .

Of course, second-quarter production probably won't hit the 2.2-million goal. With contract negotiations coming up in two months at both General Motors and Ford, preliminary sparring (nuisance strikes, etc.) are liable to put a dent in output. A June strike at either or both certainly would hex second-quarter totals.

Even without a strike, it's likely that production won't hit present estimates. On GM's and Ford's parts, some of the stratospheric planning probably is to build up inventories against a strike. Producers still claim that dealer stocks aren't up to where they should be. With the spring buying season and a strike threat coming at the same time, it's little wonder that scheduling is high.

Outlook for the railroads is better in 1955 than it was a year ago. Still, indications are that material buying won't be much above last year's low level. But business is picking up.

Freight car loadings are getting closer to 1953 levels all the time. Even so, loads are running only between 80 and 85 per cent of the 1947-1949 average.

Freight car building has experienced a small upturn in recent months—with emphasis on small. The backlog of 18,633 is the highest in a year, up from the 1954 low of 11,993 in September. It's still only about a quarter of the early 1953 backlog.

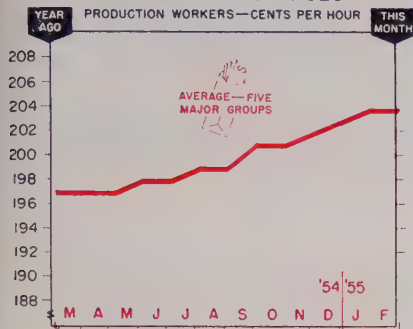
FRB Index Turns Up . . .

In its own indexes of industrial production, the Federal Reserve Board also records increasing industrial production in February and early March. Metalworking business continues to pick up, with most branches up from January and showing substantial gains over a year ago.

Construction and retail sales are particularly strong. Appliances, television and furniture are off to a good start. Unemployment rose less than seasonally.

METALWORKING WAGES

PRODUCTION WORKERS—CENTS PER HOUR



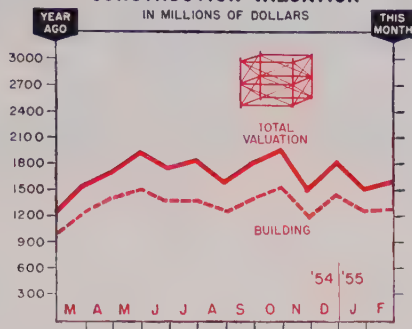
Prim. Fab. Mach- Elec. Trans.

1954	Mtls.	Prod.	inery	Mchy.	Equip.
Feb.	206	188	200	181	211
Mar.	206	188	200	180	210
Apr.	205	188	200	180	211
May	207	189	201	181	211
June	208	189	201	182	212
July	211	189	201	182	212
Aug.	210	190	201	181	213
Sept.	214	191	203	182	215
Oct.	212	192	203	183	215
Nov.	214	193	203	183	218
Dec.	214	194	204	184	219
1955					
Jan.*	215	195	204	185	219
Feb.*	215	195	205	185	220

*Preliminary.
U. S. Bureau of Labor Statistics.

CONSTRUCTION VALUATION

IN MILLIONS OF DOLLARS



37 States

	Total	Building
	1955	1954
Jan.	1,504.5	1,151.9
Feb.	1,581.1	1,221.3
Mar.	1,527.5	1,199.8
Apr.	1,691.9	1,401.6
May	1,825.3	1,497.6
June	1,733.3	1,376.7
July	1,836.9	1,386.9
Aug.	1,572.9	1,243.3
Sept.	1,816.2	1,424.2
Oct.	1,965.3	1,522.8
Nov.	1,498.9	1,199.8
Dec.	1,828.8	1,463.0
Total	19,770.2	15,628.8

F. W. Dodge Corp.
Charts Copyright 1955 STEEL.

The board's seasonally adjusted index is at 133, up 2 points from January. A year ago the index was 125; the mid-1953 high was 137.

The construction boom hasn't stopped for breath. Contract awards for heavy construction were \$375 million in the latest week reported by *Engineering News-Record*. That's the second largest weekly volume so far in 1955.

Awards are now 60 per cent over a year ago, 3 per cent above the previous record of 1953.

Industrial building spurted with a \$30-odd million contract for an atomic power plant by Consolidated Edison Co. of New York. Industrial contracts so far are almost 50 per cent over those of a year ago.

Homes on Firm Base . . .

Much of the punch in the construction upswing is from private mass housing. Its volume is more than double that of a year ago. Federal contracts, too, are showing new life. State and local awards are showing a slight pick-up.

Today's high level of home production and buying is on a sound

basis. There is every reason to expect it to continue, says Henry G. Waltemade, president, National Association of Real Estate Boards.

The fact that we are producing more new homes each year than there are families being formed is a healthy part of the picture, he says, adding: "With a bare majority of our families in a home-owner status, we have room for a vast expansion in home ownership among nearly half the population. This, with the growing desire and ability to pay for better homes, larger homes and more conveniences, can soundly sustain our rate of home production and home purchase."

Trends Fore and Aft . . .

There is nothing in the economy to foreshadow a collapse of the stock market, says the U. S. Chamber of Commerce . . . The long decline in net earnings of small firms, as compared to the net earnings of larger firms, appears to have halted, says Wendell B. Barnes of the Small Business Administration . . . Nonfarm housing starts set a February record this year, 90,000, according to the Labor Department.



Even the

smallest size

Reamers

are Standard

with L&I

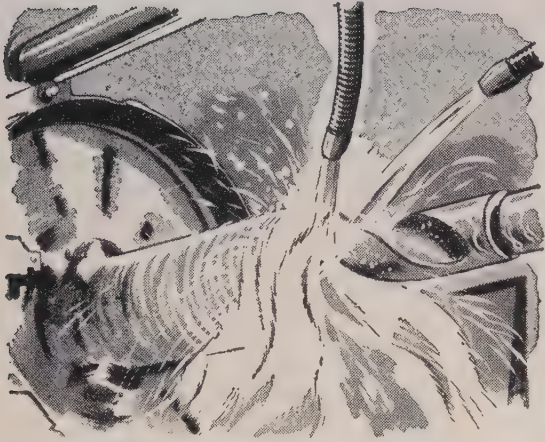


The Reamer Specialists

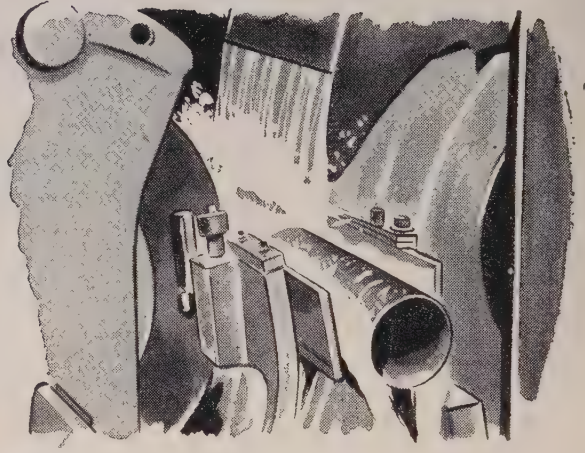
LAVALLEE & IDE, INC.

CHICOPEE, MASS.

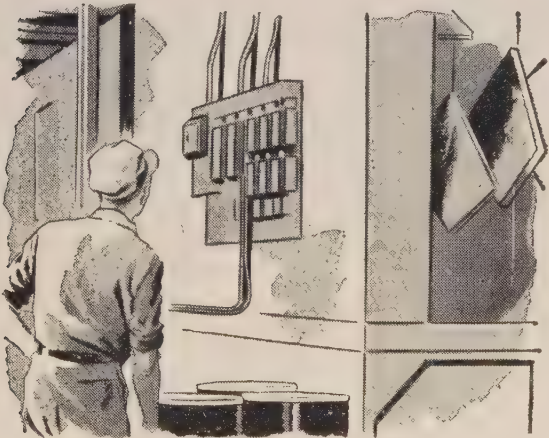
New S.E.C.O. is Tops For These Operations



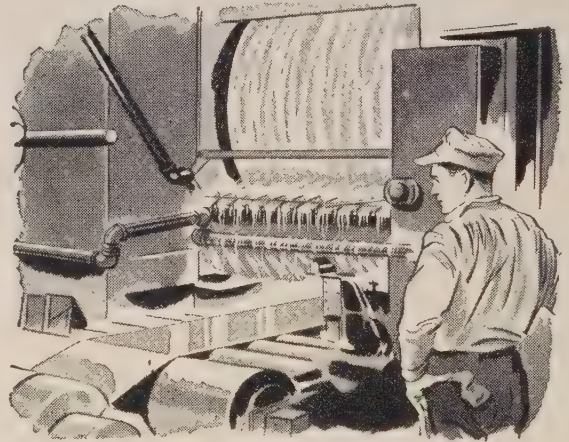
CUTTING WITH NEW S.E.C.O. Tools stay cool—require less frequent grinding. Finishes are uniformly good.



GRINDING WITH NEW S.E.C.O. Surface finishes are good. Loading and glazing of wheel are reduced—wheel life is prolonged.



WASHING WITH NEW S.E.C.O. Thorough removal of grease and dirt provides clean surfaces for smooth, long-lasting finishes.



ROLLING WITH NEW S.E.C.O. Rolls stay clean. You get maximum reductions and low power consumption.

New Sunoco Emulsifying Cutting Oil increases production, cuts operating costs. Its high machining efficiency permits uniformly good finishes, prolongs tool life. Its high detergency and purity keep tools, parts and machines clean. Its excellent mixing qualities permit its use in cold, hard or hot water. Test New S.E.C.O. in your own plant. For more information, call your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. S-3.

INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY



PHILADELPHIA 3, PA. • SUN OIL COMPANY LTD., TORONTO & MONTREAL
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FRANK J. O'LAUGHLIN
... heads Commander Mfg. Co.



HAROLD C. SEIFERT
... Republic Steel division mgr.



EDMOND P. SEVERNS
... president of Continental Steel

Frank J. O'Laughlin was elected president, Commander Mfg. Co., Chicago, to succeed J. B. Chamberlain, now chairman of the board. Mr. O'Laughlin has been director of sales and distributor relations and a member of the management committee.

Joseph A. Geuss was made chief engineer of the Hamilton, O., plant of Clearing Machine Corp., division of U. S. Industries Inc. Associated with Clearing for 17 years, his last position was engineering supervisor at the Chicago plant.

Arthur W. Cain was promoted to vice president-sales and Arthur C. Culbertson to treasurer at Volco Brass & Copper Co., Kenilworth, N. J. Mr. Cain was eastern regional sales manager; Mr. Culbertson, assistant treasurer.

W. F. Munnikhuysen was elected chairman of the board and Fred C. Foy was named president and chief executive officer of Koppers Co. Inc., Pittsburgh. They fill vacancies created by the death of Gen. Brehon Somervell last Feb. 13. He had been chairman and president.

George W. Kross Jr. was made superintendent of the Tubular Products Division plant of Babcock & Wilcox Co. at Alliance, O. Carl J. Stoops was named assistant superintendent.

Harold C. Seifert was made manager of Republic Steel Corp.'s Bolt & Nut Division, Cleveland, to succeed John Dunlop who transferred to the industrial engineering department in the general office. Charles A. Paler, superintendent of the Gadsden, Ala., bolt and nut plant, moves to Cleveland to succeed Mr. Seifert as assistant manager of the division. J. C. Noble replaces Mr. Paler as head of the Gadsden plant.

Duff-Norton Co., Pittsburgh, elected James F. McCartney and R. S. Bell vice presidents, and appointed Alfred Robinson assistant controller.

Emerson Electric Mfg. Co., St. Louis, elected Edward L. O'Neill vice president and general sales manager; R. E. Otto, vice president-motors; Gilbert F. Craig, assistant vice president-industrial relations; and W. L. Davis Jr., assistant vice president-engineering.

John Srawley joined Arwood Precision Casting Corp., Brooklyn, N. Y., as standards engineer. He was with Meehanite Corp.

Joseph K. Decker was made director of purchases for AC Spark Plug Division, General Motors Corp., Flint, Mich. He succeeds Leon R. Steffen, now on special duty until retirement May 31.

Edmond P. Severns was elected president, Continental Steel Corp., Kokomo, Ind. He also was elected a director to succeed the late Rulo S. Conrad. Ralph K. Clifford, president since 1947, was made chairman of the board to succeed D. A. Williams, named honorary chairman of the board. Howard C. Williams was elected vice president-sales, Loren E. Souers vice president - general counsel, Urlin K. Becker vice president-treasurer, Russell A. Chaffin vice president-industrial relations, W. G. Harter secretary and assistant treasurer and S. C. Land, assistant secretary and controller.

William A. Martin, works manager, Marine & Industrial Engine Division, Chrysler Corp., Detroit, was elected vice president and general manager of that division.

Effective Apr. 1, Joseph G. Schaefer will retire as vice president-operations of Wyckoff Steel Co., Pittsburgh, after 27 years with the company. Effective the same date are the following appointments: At the Ambridge, Pa., Works, Walter R. Wacht will be works manager; Stephen Maslanik, superintendent; Edsel E. Bishop, metallurgist and manager product development; Lyle A. Weaver, manager of order and traffic departments; W. C. Undercoffler, chief engineer and Gregor W. Betz



L. T. WILLISON
... J & L asst. gen. sales mgr.



D. PIERSON SMITH
... National Broach v. p.-sales



FLOYD V. SNODGRASS
... Walworth Co. v. p.-production

assistant to chief engineer. At the Chicago, Ill., Works, **Kenneth K. Boyd** was made works manager; **John A. Hildebrand**, superintendent; and **Joseph S. Mahon**, office manager.

L. T. Willison was promoted to assistant general manager of sales, **Jones & Laughlin Steel Corp.**, Pittsburgh. He was manager of sheet and strip products and is succeeded by **Howard A. Knox**, former manager, tin mill products.

John D. Murphy was elected president and **Robert H. Murphy** executive vice president of **Wiremold Co.**, Hartford, Conn. **D. Hayes Murphy**, founder and president, now serves as chairman.

Albert F. Polk was named vice chairman of the board of **Sheffield Corp.**, Dayton, O. **W. Fay Aller** was elected vice president and director of the research division.

Kenneth A. DeLonge was placed in charge of the iron and nonferrous castings section of the development and research division of **International Nickel Co. Inc.**, New York.

Paul S. Wells was promoted to sales manager, **Time Equipment Division**, **International Business Machines Corp.**, New York. He succeeds **David C. Moore**, resigned.

Rex Rainey was made chief engineer, **Oil Seal Division**, **Yale Rubber Mfg. Co.**, Sandusky, Mich.

D. Pierson Smith was elected vice president-sales, **National Broach & Machine Co.**, Detroit. He was assistant secretary-treasurer.

Clarence Felix was elected a vice president, **Avco Mfg. Corp.**, New York. He continues as general manager of the **Crosley** government products division.

Edward T. Day was made general sales manager, mechanical goods division, **United States Rubber Co.**, New York. Formerly manager of branch sales for the division, he is succeeded by **Purdy Miller** who was sales manager of molded goods.

Albert W. Gudal was made assistant purchasing agent, **Lukens Steel Co.**, Coatesville, Pa. He also became a member of the management council.

Atkins Saw Division, **Borg-Warner Corp.**, Indianapolis, appointed **John G. Deutsch** as western industrial division manager with headquarters at **Atkins'** branch warehouse in Los Angeles. **James E. Good** was made central industrial division manager with headquarters in Chicago. **James E. Butler** was made eastern division manager for industrial and hardware sales. **W. H. Brace** was made Northwest industrial division manager with headquarters in Portland, Oreg., and **W. M. Barber** was named industrial sales representative in northern Oregon.

Floyd V. Snodgrass was elected vice president-production at **Walworth Co.**, New York. He was works manager and assistant to the vice president of the **Renton, Wash.**, plant of **Pacific Car & Foundry Co.**

Donald T. O'Shea was made manager, industrial sales division, **American Industrial Safety Equipment Co.**, Cleveland, a division of **Burdett Oxygen Co.**

A. A. Porter was made vice president in charge of erecting for **American Bridge Division**, **U. S. Steel Corp.**, Pittsburgh. He succeeds **C. William Doerr**, retired. **Albert J. Anderson** was made erecting manager for the division.

Seaporcel Metals Inc., Long Island City, N. Y., elected **Frank B. Gibson** vice president-production.

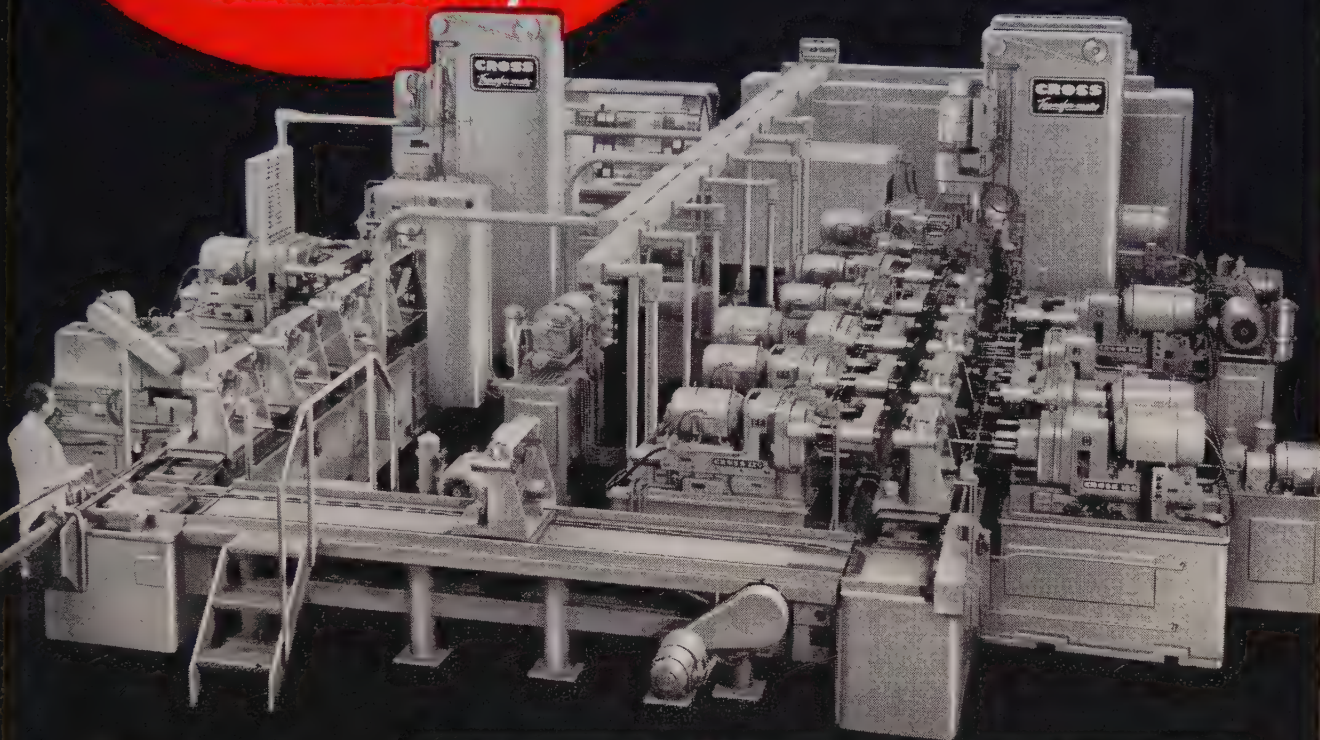
National - Standard Co., Niles, Mich., elected **James A. Mogle Jr.** vice president, purchasing and reciprocal relations; and **Thomas H. Pearce**, vice president of engineering and operations. **William D. Pearce** was made assistant vice president, bead wire and hose wire sales; **George Hussey**, secretary and assistant to the president.

W. E. Dunn was elected vice president-sales, **Mayer Mfg. Corp.**, Chicago.

Raymond J. Nuber was elected president of **W. A. Case & Son Mfg. Co.**, Buffalo. He succeeds

**Machines
Flywheel Housings
and Changes Set Up
Automatically**

Another Transfer-matic by Cross



- ★ Completely machines (except for grinding three faces) fly-wheel housings for both standard and automatic transmissions.
- ★ Flexibility for scheduling because either part may be produced as required—set up changes and proper tools are selected automatically at each station.
- ★ 170 pieces at 100% efficiency.
- ★ 49 drilling, 22 chamfering, 4 reaming, 2 counterboring, 2 boring, 30 inspecting, and 30 tapping operations.
- ★ Palletized work holding fixtures with automatic transfer from station to station.
- ★ Hydraulic power wrench for clamping parts.
- ★ Other features: Complete interchangeability of all standard and special parts for easy maintenance; construction to J.I.C. standards; hardened and ground ways; hydraulic feed and rapid traverse; automatic lubrication.

Established 1898

THE **CROSS** CO.
DETROIT 7, MICHIGAN
Special MACHINE TOOLS



MAGNUS A. GRUNLAN
... Dollin Corp. plant manager

Nathan J. Higginbotham, retired after heading the firm 29 years.

Magnus A. Grunlan was appointed plant manager of Dollin Corp., Irvington, N. J. Prior to joining Dollin, he was plant manager of Lanston Monotype Machine Co., and works manager of Intertype Corp.

Albert L. Carlson was elected president and treasurer, Carling Turbine Blower Co., Worcester, Mass. Arnold R. Carlson Sr. was elected vice president and assistant treasurer.

J. Edwin Heath was made division manager in the sales department of Aro Equipment Corp. He has headquarters in High Point, N. C. Mr. Heath replaces Norman Sine, who transferred to the Midwest. Gene R. Voigt was made assistant to the general manager, air tool division, Bryan, O.



KENNETH F. ODE
... heads new White Motor division

White Motor Co., Cleveland, named Kenneth F. Ode general manager in charge of a new division formed to handle development and manufacture of a diversified line of non-automotive products. Since joining White in 1951, Mr. Ode has been manager of government contracts. He formerly was manager of operations at Continental Foundry & Machine Co.

Richard S. Russell was elected vice president, Sleeper & Hartley Inc., Worcester, Mass.

R. Adm. Wilson D. Leggett Jr., USN, ret., was elected vice president-engineering of American Locomotive Co., Schenectady, N. Y.

Henry L. Charlton, former vice president and director of Reynolds Metals Co., is now assistant to the president in charge of sales and manufacturing for Phoenix Mfg. Co., Joliet, Ill.



C. RUSSELL EPLEY
... heads new American Brass mill

C. Russell Epley was named manager of a new brass mill to be built by American Brass Co. in the Paramount district of Los Angeles. He was sales manager of the company's San Francisco office.

Lewis A. Hovey was made division superintendent and William E. Brandt assistant division superintendent, open hearth and foundry division, Homestead, Pa., Works, U. S. Steel Corp.

William M. Westphal was elected vice president-sales, Moore Steel Inc., New Orleans. He was general manager-sales.

Pyle-National Co., Chicago, elected William C. Croft executive vice president. He was works manager and vice president-production.

J. H. Steele was named sales manager, R. E. Uptegraff Co., Scottsdale, Pa.

OBITUARIES...

Elton Hoyt II, 66, senior managing partner of Pickands Mather & Co., Cleveland, died Mar. 16.

Clarence R. Shank, 57, general superintendent, Valley Mould & Iron Corp., Chicago, died Mar. 12.

Fitzwilliam Sargent, 62, a vice president, Budd Co., Philadelphia, died Mar. 14. He was in charge of railway sales.

George J. Hajek, 49, eastern di-

vision manager, Ceco Steel Products Corp., died Mar. 11 in Summit, N. J.

E. Robert Carter, 68, retired manager of the New York office of Fafnir Bearing Co., New Britain, Conn., died Mar. 9.

Lewis P. Huther, 64, vice president, Huther Bros. Saw Mfg. Co., Rochester, N. Y., died Mar. 11.

W. J. Collins, president-treasurer, Rochester Bronze & Aluminum Co., Rochester, N. Y., died Mar. 2.

Harold W. Browall, 54, a sales metallurgist at Inland Steel Co., Chicago, died Mar. 9.

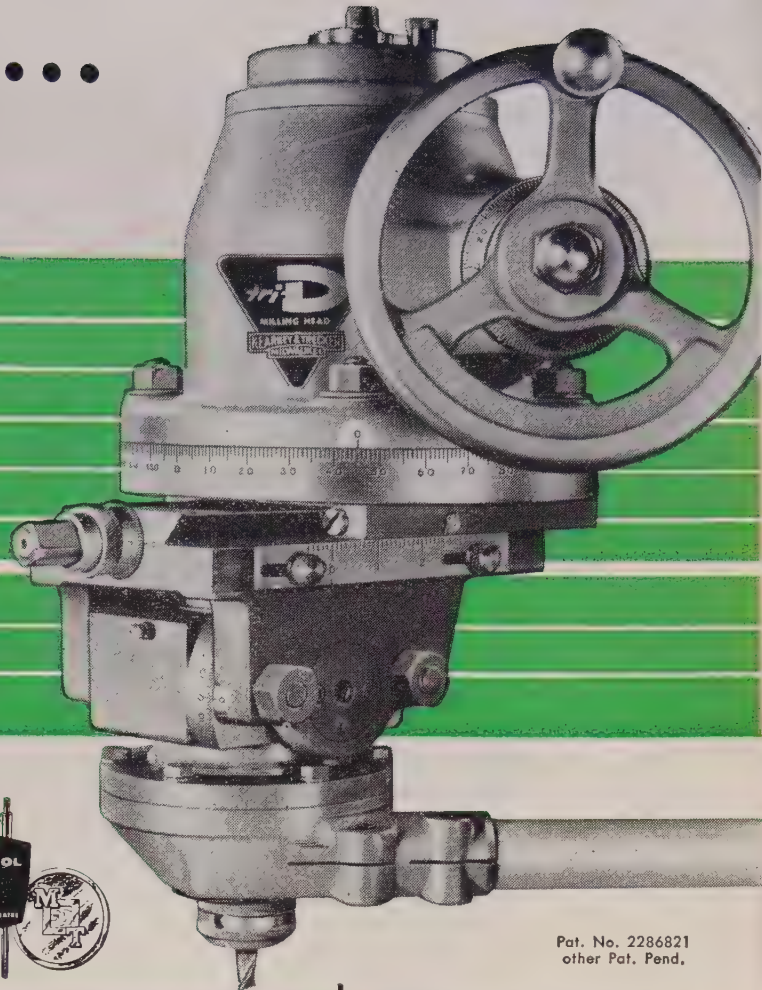
Aubrey J. Grindle, 65, president and chairman, Grindle Corp., Harvey, Ill., died Mar. 13.

Frank W. Kellogg, 66, general manager, Sicard Industries Inc., Watertown, N. Y., died Mar. 7.

C. H. Banning, 66, president and founder, Banning Engineering Co., San Gabriel, Calif., died Mar. 7 in Los Angeles.

Presenting...

the *NEW*



adaptable to almost all horizontal and some vertical milling machines regardless of make

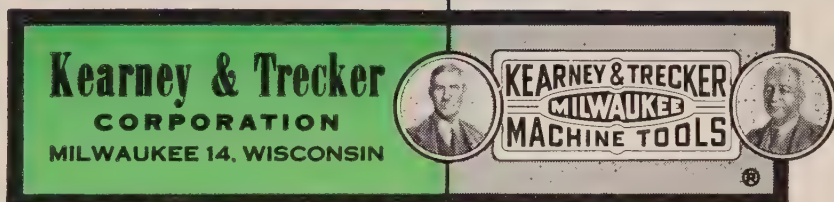
The new TRI-D Milling Head is the latest addition to Kearney & Trecker's outstanding Rotary Head milling family. TRI-D is designed for quick, easy mounting on practically all horizontal and some vertical milling machines.

The TRI-D Milling Head can produce most any geometric shape in metal employing straight lines, radii or angles — all in a single set-up. Power is transmitted to the spindle through a heavy-duty flexible shaft driven by the machine spindle or a separate variable speed motor unit.

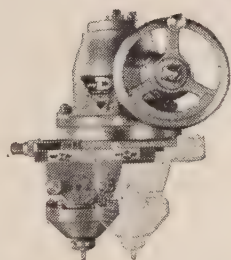
TRI-D's matchless technical perfection brings to metal cutting an insured investment equalled by no other single element in production. Find out how you can increase production and cut milling costs with this new milling head. Your Kearney & Trecker representative will be pleased to give you all the details. Contact him today, or write Kearney & Trecker Corporation, Milwaukee 14, Wisconsin.



Pat. No. 2286821
other Pat. Pend.



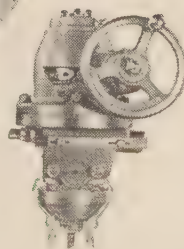
Only has all 3 . . .



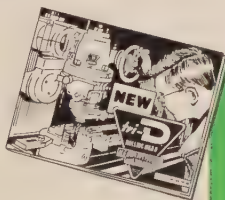
1. LATERAL ADJUSTMENT of the cross-slide permits off-setting the spindle up to $2\frac{1}{2}$ ". A large dial, graduated in thousandths, is mounted on the cross-slide screw. Precision-ground screw assures the ultimate in accuracy and long life. A friction lock secures cross-slide position.



2. ROTARY MOVEMENT of the head through a complete circle, or any specific part, is easily accomplished by turning handwheel in either direction. Combined with lateral adjustment of the cross-slide, this rotary movement permits milling of circles up to 5" in diameter.



3. ANGULAR ADJUSTMENT of cutter, an exclusive feature, is the swivel block which permits positioning of the cutter at any angle in the vertical plane, up to 15° , either side of center. Easy-to-read graduations make setting to a precise angle a very simple operation.



Kearney & Trecker Corporation
14 W. National Avenue
Milwaukee 14, Wisconsin

Please send me catalog No. TD-10 with details of the new TRI-D Milling Head.

Name.....
Address.....
City.....
State.....
Zone.....

FAMOUS FIRSTS IN THE IRON & STEEL INDUSTRY

BIRTHPLACE OF A GIANT



In 1644, twenty-two years after the massacre at Falling Creek, Virginia and the destruction of America's first blast furnace, the first producing ironworks was started on the banks of the Saugus River, halfway between Boston and Salem, Massachusetts. These works included a small blast furnace and a forge.

At the Saugus Works the first casting in America was made by Joseph Jenks. It was for an iron cooking pot of about one quart size. The pot and lid together weighed about 3 pounds, and on the inside measured $4\frac{1}{2}$ inches in width and depth

both. From this small casting today's gigantic iron and steel industry has grown.

The J. E. Baker Company is proud of their part in this tremendous growth. To help producers get more uniform ingots and increased furnace efficiency at lower refractory costs, BAKER'S MAGDOLITE, the original dead-burned dolomite was developed. Down through the years, BAKER'S MAGDOLITE has maintained a superior product that is constantly 5 ways better: Composition, Preparation, Strength, Economy and Quality. The next time you order dead-burned dolomite, specify BAKER'S MAGDOLITE.

2-55

ANOTHER FAMOUS FIRST

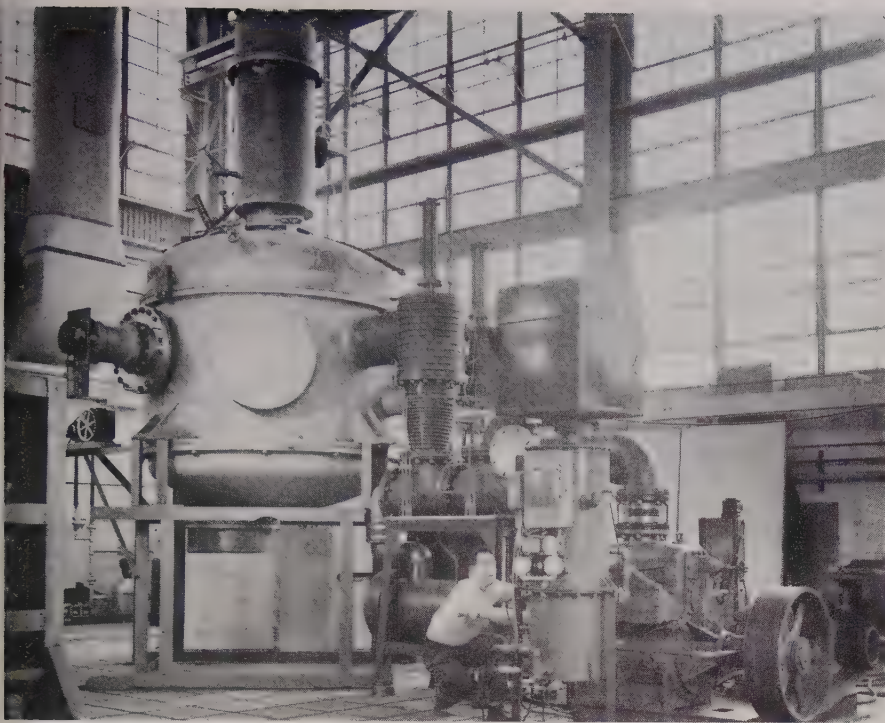


BAKER'S MAGDOLITE

The original dead-burned dolomite

THE J. E. BAKER COMPANY

YORK, PENNSYLVANIA • PLANTS: BILLMEYER, YORK, PENNSYLVANIA • MILLERSVILLE, OHIO



"Building block" vacuum furnace design . . .

Adds Flexibility in Vacuum Melting

FLEXIBLE furnace design is one way to put greater vacuum metals production on a sound economical basis. This approach, the use of modules or "building blocks," was used by Consolidated Vacuum Corp., Rochester, N. Y., a subsidiary of Consolidated Engineering Corp., in the design and construction of a 1000-lb-capacity, high-vacuum furnace. The modular-type furnace offers flexibility in operational techniques and provides expansion to larger capacities.

Such a furnace (shown above) was recently shipped to the Metallurgical Development Laboratory of Westinghouse Electric Co. in Blairsville, Pa. Initially, it will be used to melt a 350-lb charge and pour a single ingot. But by interchanging the crucible-coil assembly and the furnace bottom, adding vacuum interlocks and a second, large-capacity vacuum pump, the furnace can be expanded to 1000-lb capacity for semi-continuous operation. This will permit the pouring of single, multiple or centrifugal cast ingots. Alterations on the furnace can be

made in the field without disturbing the basic installation.

Current applications: Vacuum-melted metals go into jet engines and planes and in large rollers and presses used by the chemical industry.

Mack Trucks Inc. Diversifies

Mack Trucks Inc. acquired White Industries Inc. and Radio Sonic Corp., all of New York. The purchase of these firms, manufacturers in the field of electronics for aviation, industrial and military applications, is the first major step in a long-range product diversification program. The two firms will become the Electronics Division of Mack Trucks Inc., maker of heavy-duty trucks, busses and fire apparatus.

Timken Enlarges Tubing Mill

To meet increased demand for longer, heavy-walled tubing, Timken Roller Bearing Co.'s Steel Division, Canton, O., will extend its Gambrinus piercing mill. It will handle tubing which is from 50 to

130 per cent longer than that now processed there. To do the job, other mill equipment will be modernized and enlarged. Engineering work on the steel mill modernization program is under way. The project will be completed sometime in the late summer.

Atlantic Steel Lets Contracts

Atlantic Steel Co., Atlanta, awarded contracts totaling about \$8.5 million, for construction of a merchant bar and rod mill (see STEEL, Feb. 7, p. 97). General engineer for construction of the buildings and installation of the new mill is Rust Engineering Co., Birmingham. The mill itself will be housed in a building 740 ft long by 100 ft wide. Two warehouses attached to the main building will provide an additional 52,000 sq ft of space.

Mill machinery for the 21-stand combination bar and rod mill is being built by Morgan Construction Co., Worcester, Mass. Contracts for the electrical machinery, equipment and installation were awarded to General Electric Co., Schenectady, N. Y. Rust Furnace Co., Pittsburgh, received the contract for the reheating furnace. Whiting Co., Harvey, Ill., will supply four overhead cranes for the mill and warehouses.

Actual construction of the buildings, part of a \$10-million modernization and improvement program, is scheduled to start in May. Installation of the mill machinery and electrical equipment will begin about October. The mill is expected to be in operation by September, 1956.

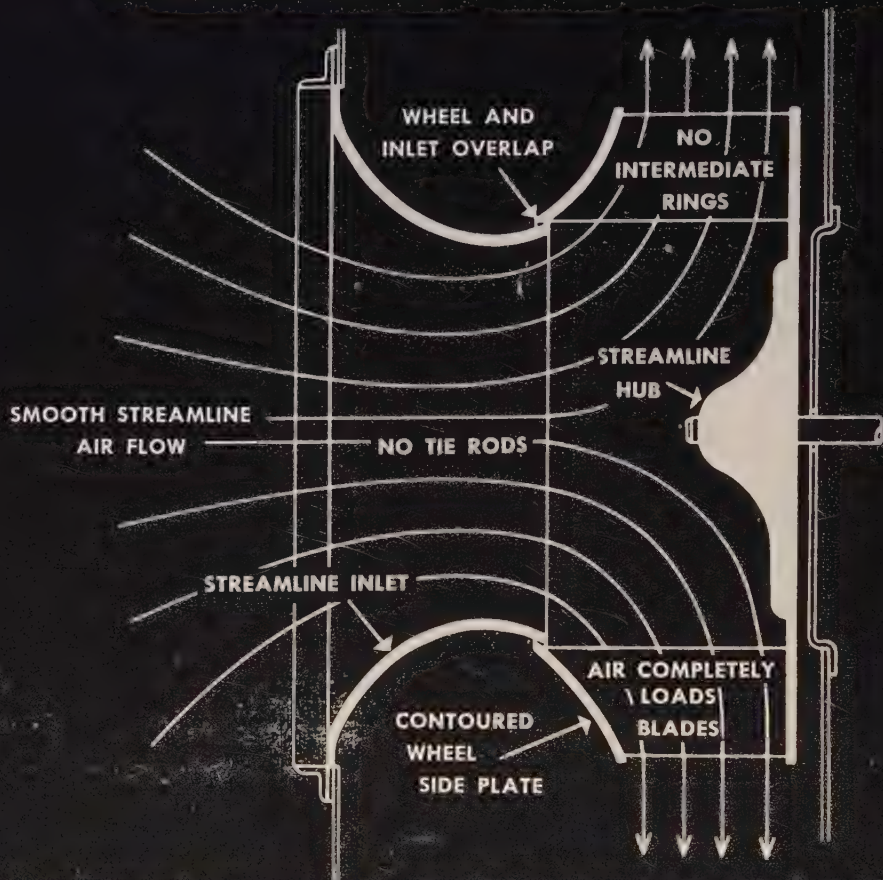
Erie Mining Buys Crushers

Erie Mining Co., Cleveland, has purchased five gyratory crushers from Traylor Engineering & Mfg. Co., Allentown, Pa., for use in the taconite beneficiation plant being erected near Aurora, Minn., by Erie. Estimated cost is more than \$300 million. The initial portion of the plant, for concentrating and pelletizing hard, low-grade taconite, is being constructed to produce 7.5 million gross tons of taconite pellets annually. Pellets will contain 64 per cent iron. Erie Mining Co.,

(Please turn to page 68)

Fact:

Westinghouse Aerodynamic Fan Line More Efficient,



MECHANICAL EFFICIENCY 86%...
STATIC EFFICIENCY OVER 80%

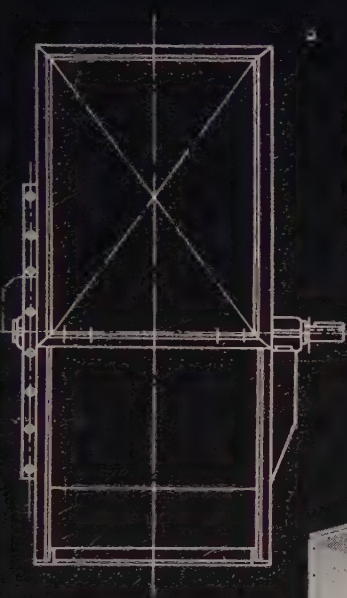
With unobstructed airflow through the wheel in all sizes, the "Silentvane" fan line also offers these other practical advantages:

1. True self-limiting horsepower characteristic
2. Peak horsepower developed in normal selection range
3. Quiet, stable operation
4. Sharply rising pressure characteristic throughout normal performance range

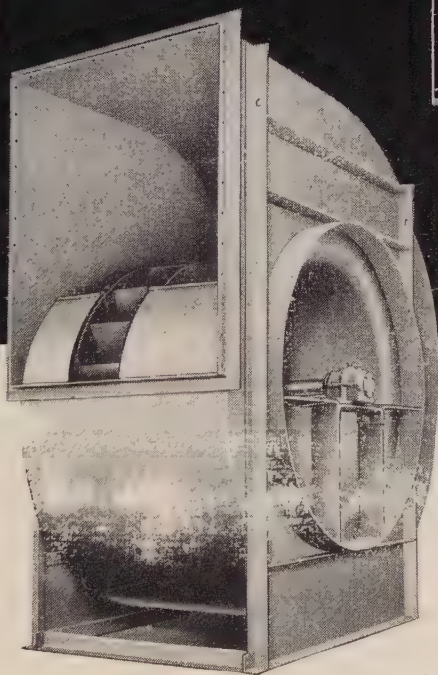
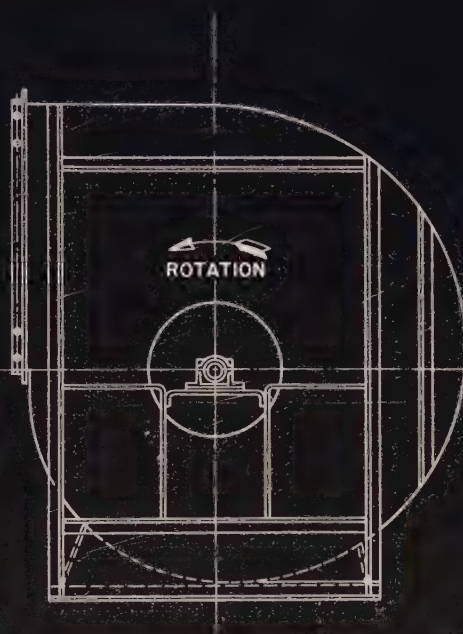
WIDE RANGE OF APPLICATION

Handling from 600 to 500,000 cfm, the performance-proved Westinghouse "Silentvane" fan line provides an almost unlimited choice of air moving equipment. Coupled with Westinghouse-Sturtevant power-saving Vane Control, "Silentvane" fans offer precise control of air volume at optimum efficiencies. In smaller sizes, 36" and under, fan arrangements are convertible.

Research Makes "Silentvane" Quiet, Non-Overloading



Rugged housing construction and angle iron bracing prevents vibration . . . means quieter operation.



AIRFOIL FLADING
AVAILABLE

. . . where quiet operation
and power evaluation are
prime considerations—
5% less noise intensity . . .
2% mechanical efficiency.

MORE FACTS?

Call your nearest Westinghouse-Sturtevant Sales Engineer . . . he's the "Man with the Facts" on heating, air handling, and electronic air cleaning . . . or fill in the coupon below.

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Sturtevant Division, Dept. 14B
Hyde Park, Boston 6, Mass.

*I'm interested in your new booklet.
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AIR HANDLING**

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NAME AND TITLE.....

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CITY.....STATE.....

look to **ESCO** for **ALLOY** **AVAILABILITY**

- **HASTELLOY B & C**
- **ALLOY 20**
- **INCONEL**
- **MONEL**
- **PRECIPITATION HARDENING GRADES**
- **0.03 MAX. CARBON**



YOU GET FAST DELIVERY... even on small orders of special alloys... Hastelloy B & C, Monel, Inconel, Alloy 20, 0.03 Max. Carbon, Precipitation Hardening Grades are just a few examples of alloys that are available—fast—when you need them. No waiting for long runs of standard production items to be completed before

your order can be started. Big orders can be handled efficiently and economically too. A complete metallurgical laboratory enables ESCO to take advantage of the latest technological advances. Result: Outstanding quality control on every order.

UNUSUAL SHAPES AND SIZES ARE NO PROBLEM EITHER...

ESCO can supply you with static or centrifugal castings in wall sections and dimensions to meet your most exacting requirement. ESCO Shellcast is available, too, where needed.

Ask for details or write for free booklets... "How to cut Costs With ESCO Spuncast®" ... and "ESCO Stainless and High Alloy Products for the Process Industries".

**specialists in
high alloy
steels**



ELECTRIC STEEL FOUNDRY CO.

Manufacturing Plants
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712 Porter St.
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ESCO International and New York Office
420 Lexington Ave., New York City, N.Y.
Other Offices and Warehouses
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Seattle, Spokane, Wash.
Centralia, Pa.
Houston, Texas
Eugene, Ore.

Salt Lake City, Utah
Honolulu, Hawaii
In Canada, Vancouver,
British Columbia and
Toronto, Ontario.

(Concluded from page 65)

owned by Bethlehem Steel Corp., Youngstown Sheet & Tube Co., Interlake Iron Corp. and Steel Co. of Canada Ltd., is operated by Pickands Mather & Co., Cleveland.

Operates Nuclear Laboratory

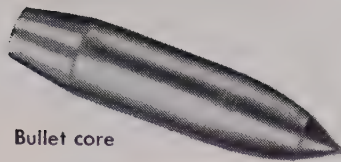
Nuclear Metals Inc., an organization established by Arthur D. Little Inc., Cambridge, Mass., and Allegheny Ludlum Steel Corp., Pittsburgh, has been functioning as contractor-operator of the atomic energy metallurgical research laboratory at Cambridge since mid-1954, the company announces. The laboratory was managed from 1942 through mid-1954 by the Massachusetts Institute of Technology. Its large scientific and technical staff, under the direction of Dr. Albert R. Kaufmann, will continue research in reactor and other materials, including uranium, beryllium, zirconium and alloys closely associated with the development of atomic energy.

Bolt and Nut Plant Improved

Bethlehem Pacific Coast Steel Corp. installed a high-duty forging machine and electrolytic galvanizing equipment at its Seattle bolt and nut plant. The forging machine enables the plant to accept orders for more complex specialty fasteners and makes possible the production of a wider diameter range of bolts. The electrolytic galvanizer, plus existing hot-dip equipment, enables the plant to offer either process to its customers.

Michigan Firm Reorganizes

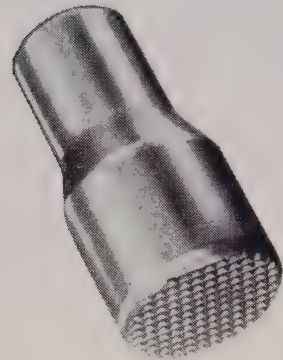
Stockholders of Lincoln Park Industries Inc., Lincoln Park, Mich., manufacturer of gages and inspection tooling, approved reorganization plans. Manufacturing and sales operations will be concentrated in Lincoln Park. Subsidiary operations and manufacturing properties in Jamestown, N. Y., will be sold. Sales of Curtis Machine Corp., Jamestown, to Carborundum Co., Buffalo, and of Standard Portable Cord Co., Jamestown, to a newly formed corporation have been consum-



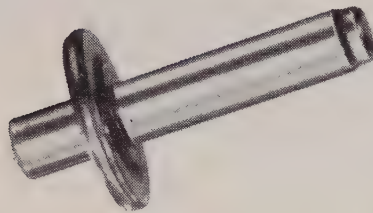
Bullet core

Cold steel flows like putty... with Pennsalt's FOS PROCESS

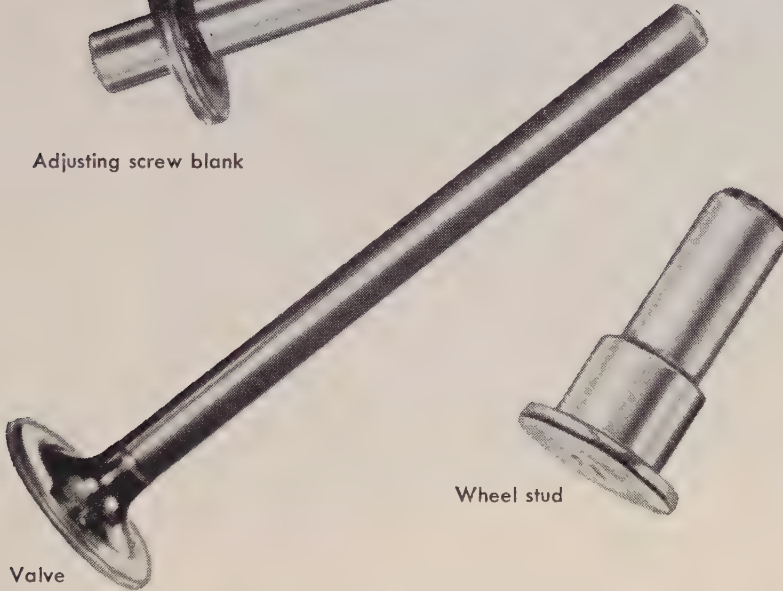
(SAVES TIME • METAL • LABOR)



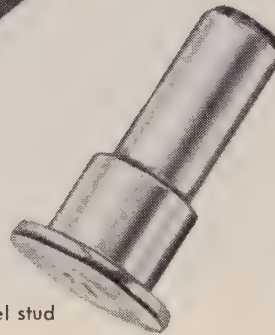
Cap nut blank



Adjusting screw blank



Valve



Wheel stud

Cold extrusion is made practical, cold working of steel is more profitable with Pennsalt's Fos Process, a new method of locking a phosphate coating and lubricant onto a steel surface. Cold steel actually flows like putty when extreme pressures are applied. With Fos Process there is no breakdown of lubricants to cause seizing and galling. Die life increases... in one case by 666%!

Where can you use the Fos Process?
In mass production of steel automotive and ordnance parts, in tube and wire drawing. Expensive steel alloys can often be replaced with

plain carbon steels. The combination of Fos Process and severe cold working upgrades the physical and metallurgical properties of the steel... cuts unit costs!

Look at these few parts carefully. Many more parts and shapes like these can be cold-extruded or cold-headed economically, with little finish machining, by using Pennsalt's new Fos Process. Call the specialist from Pennsalt for a complete survey of your production line. Often your blueprint can help him determine rapidly if the Fos Process is for your immediate use. Fill in the coupon... get all the facts now!



Metal Processing Dept.
Pennsylvania Salt Manufacturing Company
1071 Widener Bldg., Philadelphia 7, Pa.

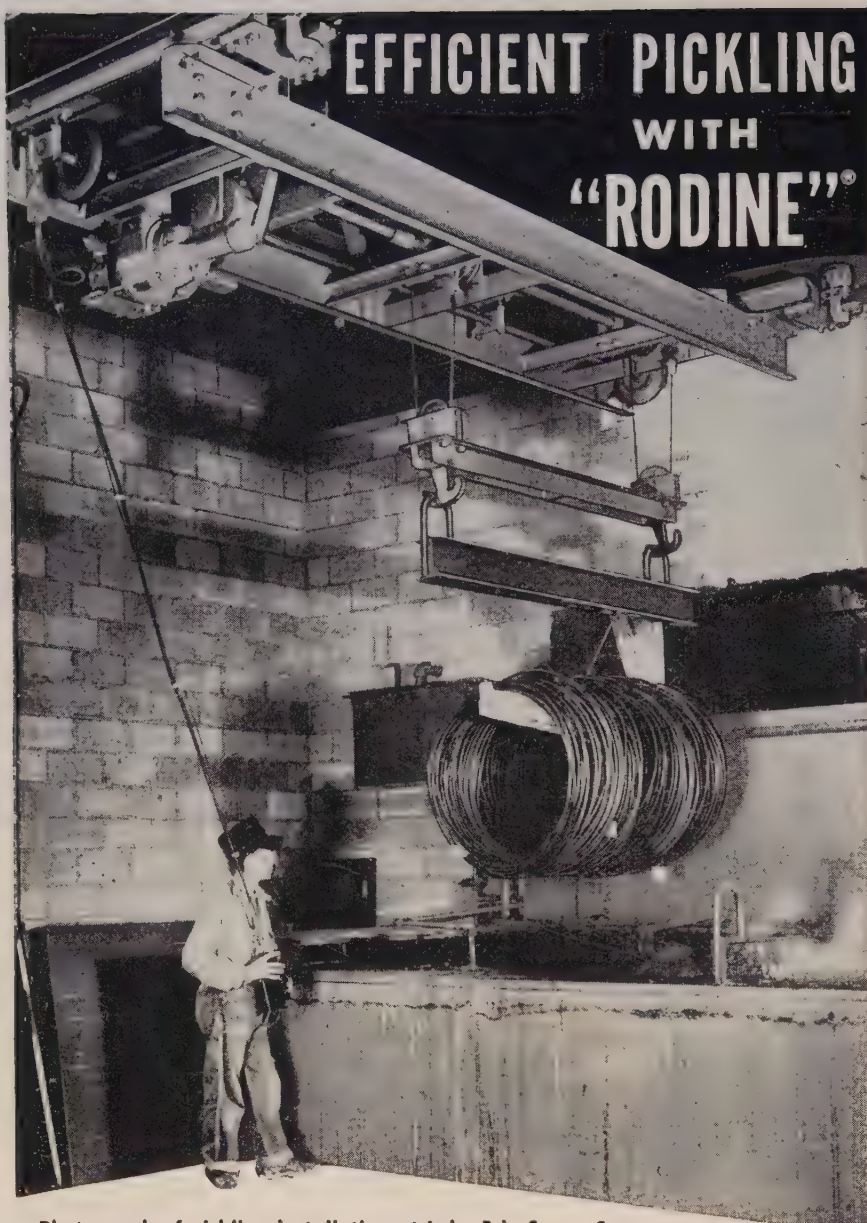
- ☐ Have Pennsalt specialist call.
- ☐ Send technical illustrated folder.
- ☐ Enclosed is blueprint... can I use Fos Process in mass-producing by cold extrusion?

Name..... Title.....

Company.....

Address.....

City..... Zone... State.....



Photograph of pickling installation at Lake Erie Screw Company, by courtesy of The American Monorail Company, Cleveland, Ohio.

Rod and wire are pickled clean in "Rodine"-inhibited acid without waste of either acid or metal. Breakage in drawing, from acid brittleness, is minimized.

Wire and rod, pickled with "Rodine", as compared with less effective inhibition, are larger in diameter, and when drawn to the finished gauge the coils are longer and correspondingly heavier.

"Rodine" more than pays for itself in savings of acid and metal.

AMERICAN CHEMICAL PAINT COMPANY

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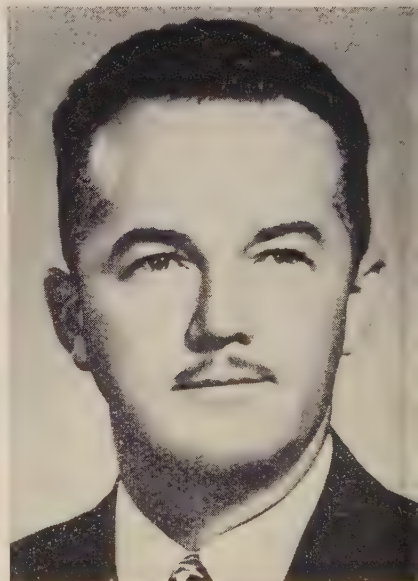
mated. Officers of Lincoln Park now are: Raymond E. North, president; R. G. Field, treasurer; C. A. Wilson, secretary; and R. H. Nilsen, controller.

Sells Canning Machinery Line

Food Machinery & Chemical Corp., San Jose, Calif., acquired the canning machinery business of Chain Belt Co., Milwaukee. Chain Belt's vacuum dehydrator is not included in the acquisition of products. The purchase will serve to round out the extensive lines of food preparation and processing equipment produced by its Canning Machinery Division at its major plants in Hoopeston, Ill., and San Jose.

SPS Acquires Prock Plant

Standard Pressed Steel Co., Jenkintown, Pa., took possession of the Harry A. Prock Cabinet Co. plant, which contains about 100,000 sq ft of space. A few hundred feet south of the SPS plant, it is being used for storage and warehousing of the firm's products, including precision fasteners, aircraft specialties and shop equipment.



Harry B. Osborn Jr.

ASTE Elects President

Harry B. Osborn Jr., technical director, Tocco Division, Ohio Crankshaft Co., Cleveland, was elected president of the American Society of Tool Engineers, Detroit, at its annual meeting in Los Angeles.

FOR THE FIRST TIME A COMPLETELY NEW DESIGN OF SMALL, LOW PRICE **SCIAKY** WELDERS

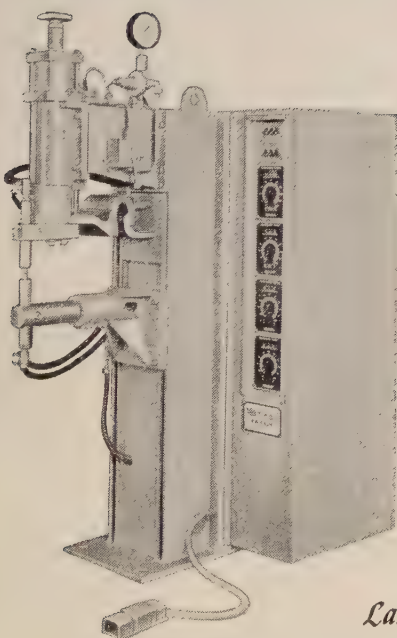
Featuring all the Ruggedness, Dependability and Consistency of Operation
Common to Sciaky Basic Thinking—Welders Designed to Do More Useful Work
at Lower Operating Cost with Maximum Reliability!

SP-1 AIR OPERATED, PRESS TYPE, LOW IMPEDANCE, SINGLE PHASE SPOT WELDER

Through advanced design, mass production tooling, and complete use of integrated parts, Sciaky is introducing a complete new line of competitively priced, small, standard spot and projection welders. Check these important design features . . .

- Pneumatic Double-Acting Cylinder Head
- Recirculating Ball Bearing System Guided Ram
- Side Mounted Sciaky Integral Control
- Low Impedance Secondary Circuit
- Sciaky High Efficiency Welding Transformer
- Fabricated Frame with Heavy Vertical "T" Slotted Columns
- Solid Copper Alloy Lower Arm
- Silver-Plated, Laminated Flexible Shunt Conductor

For complete details and specifications on the SP 1 spotwelder, or EP 1 projection welder, write for Bulletin 324-2.



*Largest Manufacturers of Electric
Resistance Welding Machines in the World*

SCIAKY

SCIAKY BROS., INC. • 4909 W. 67th STREET • CHICAGO 38, ILLINOIS



Ross Exchangers share limelight in spectacular performance of 25 Union Pacific Gas Turbine Locomotives

Pulling a heavy freight in the Wasatch Mountains of Utah, the Gas Turbine Locomotive above is one of 25 which are making history for the Union Pacific Railroad. *Each is equipped with Ross Lube Oil Coolers, Fuel Oil Heaters and Atomizing Air Coolers!*

The problems and handicaps of the Union Pacific route are known to many — rugged terrain, high altitudes, dry air, terrific winds, bitter cold, heavy blizzards and contrastingly high summer temperatures. Such a range of severe conditions

demands the most rugged and dependable kind of equipment, *naturally*. The fact that Ross Exchangers are on the entire fleet of 25 locomotives speaks for itself. Again, it confirms a singular kind of confidence that has been long felt throughout industry: Ross Exchangers make other products better and, therefore, better products are equipped with Ross Exchangers.

KEWANEE-ROSS CORPORATION

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

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REPRESENTATIVES

Henry & Wright Division, Emhart Mfg. Co., Hartford, Conn., appointed Motch & Merryweather Machinery Co., Cleveland, its representative for Ohio, Michigan and western Pennsylvania for its line of automatic dieing machines. Frederick R. Seghers continues as sales engineer for Henry & Wright, working with Motch & Merryweather from its Detroit branch office. Other branch offices are in Cincinnati and Dayton, O.

Ready Tool Co., Bridgeport, Conn., appointed R. W. King Co., Meriden, Conn., as representative for New England, upper New York State and Canada. Ready Tool manufactures antifriction, carbide-tipped and high-speed centers, grinder and milling machine dogs.

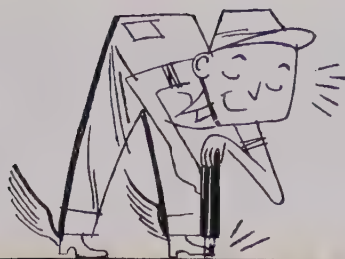
Forker Corp., Cleveland, appointed the following representatives for its Ohio Tramrail Systems line: Matco Products Co., Buffalo; W. R. Lloyd Co., 448 Washington Rd., Pittsburgh; and M. H. Equipment Inc., Peoria, Ill.

Elmes Engineering Division, American Steel Foundries, Cincinnati, manufacturer of hydraulic presses and equipment, appointed G. R. Porterfield as district representative in the New York territory.

Graver Water Conditioning Co., New York, a division of Graver Tank & Mfg. Co. Inc., appointed Frontier Engineering Services Co., Salt Lake City, Utah, to handle its waste treatment equipment.

Wyckoff Steel Co., Chicago, manufacturer of cold finished steel, appointed Steel-Structures-Equipment Co., Fargo, N. Dak., sales representative for North and South Dakota.

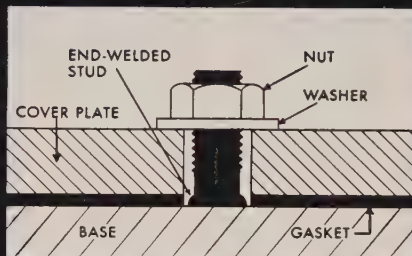
Automatic Switch Co., Orange, N. J., named Moorlane Co., North Kansas City, Mo., distributor of solenoid valves. Shipments will be made from the Moorlane warehouse.



"STUD" NELSON SECURES COVER PLATES IN A FLASH!

Pfft! A split second with a NELWELD® gun and you've got a sturdy end-welded stud right where you want it . . . ready to line up with the cover plate hole. That's real speed!

Multiply the saving in time by the number of fastening locations on your product. Add what you save by eliminating drilling and tapping; then figure the heavy bosses you won't need.



NELSON® studs . . . used to hang, handle or hold . . . come in many shapes, types and sizes.

Nelson Field Engineers, all cost-reduction specialists, operate from a nationwide chain of field offices and warehouses. They're trained to efficiently handle all your needs for studs, equipment, or fastener engineering. Write for details.

Stud Nelson

Fasten it Better
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Please send more information on cost-saving stud welding applications.

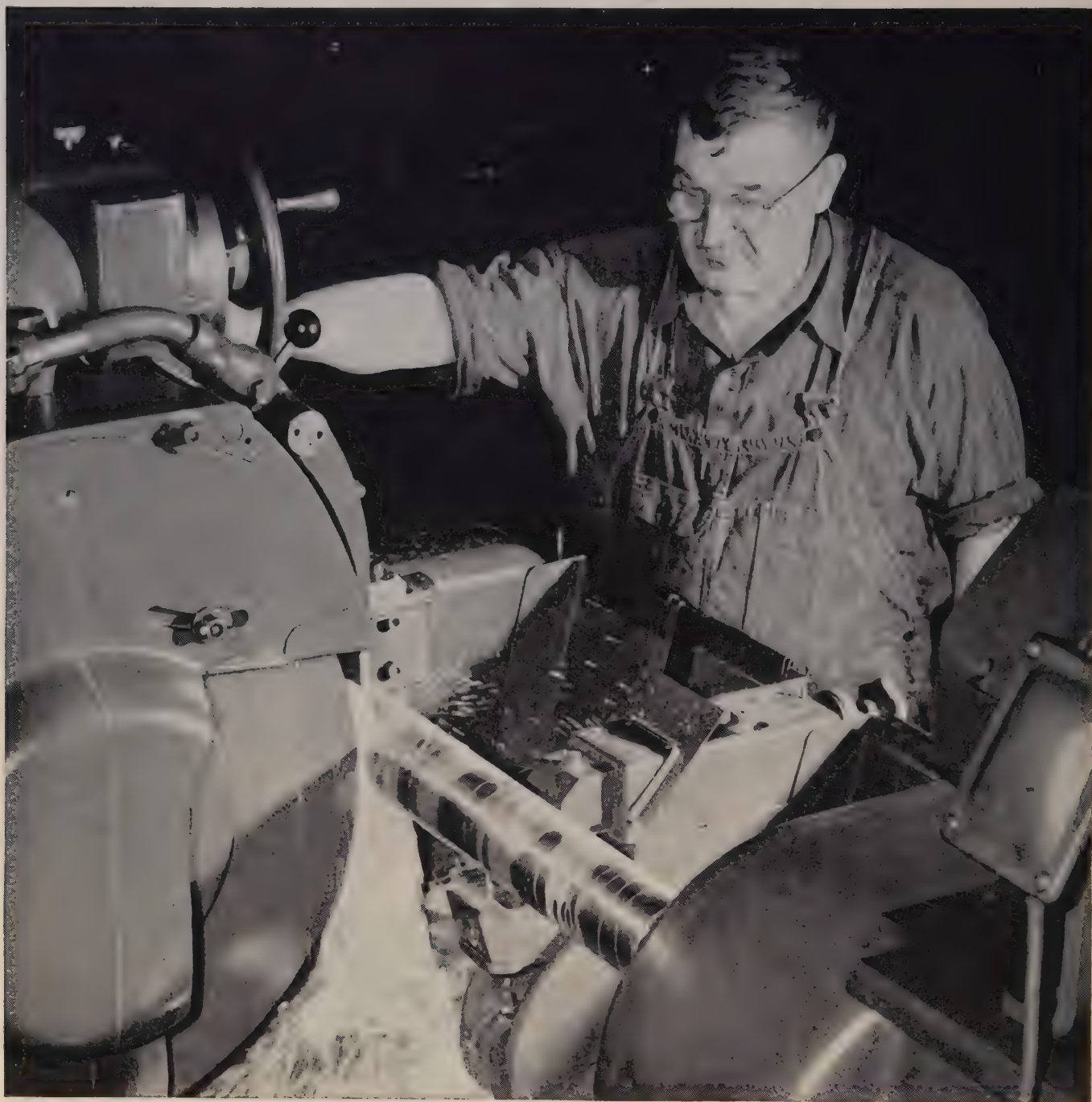
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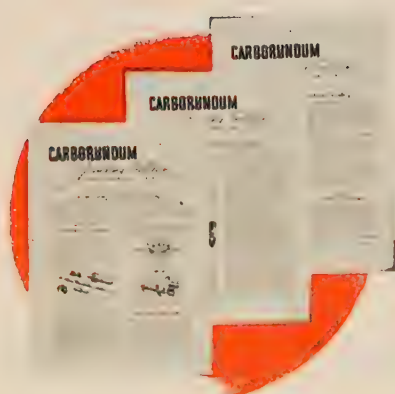
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NELSON STUD WELDING DIV. OF GREGORY INDUSTRIES, INC. **LORAIN, OHIO**



For precision grinding... **CENTER TYPE**



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FREE BULLETINS! Packed with helpful information on cylindrical grinding, both center type and centerless. Write The Carborundum Company, Dept. S 81-55, Niagara Falls, N. Y. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.



...or **CENTERLESS**

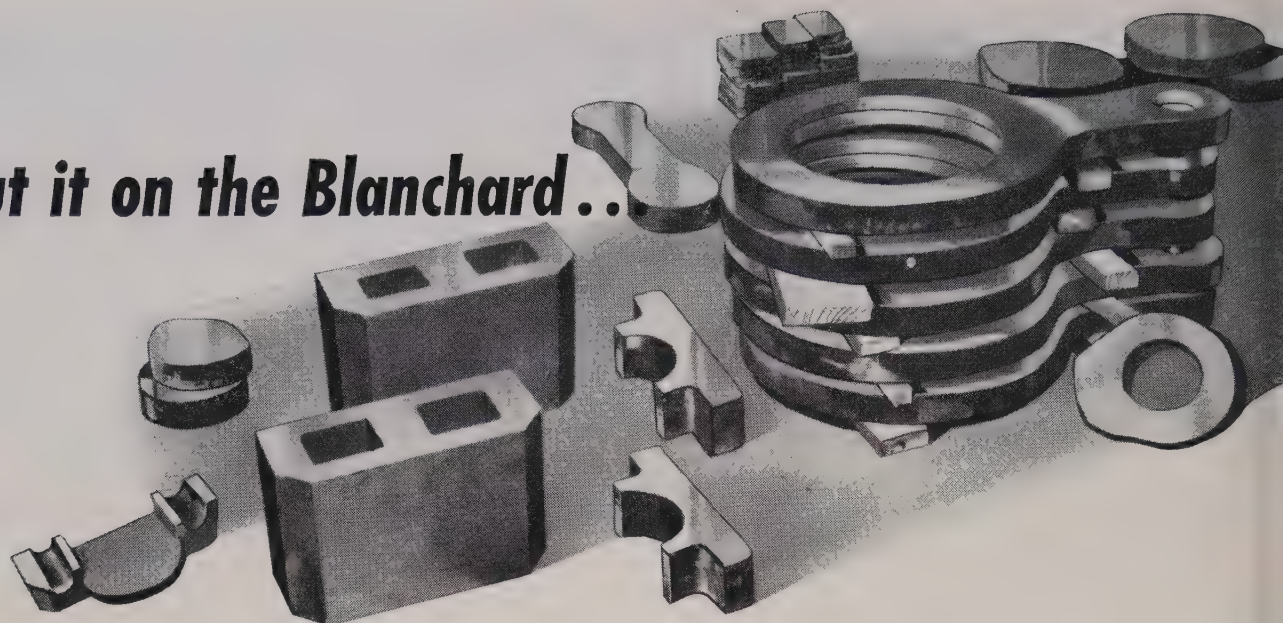
THE RIGHT WHEEL for every grinding operation can improve your quality, boost production... and cut your costs! To give you the exact combination of abrasive grain, grade, structure and bond,

CARBORUNDUM puts years of research, engineering and testing into the development of every new grinding wheel—as much as you'll find behind any other precision machine tool in your shop.

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REGISTERED TRADE MARK

...continually putting more **SENSE** in your abrasive **DOLLAR**

Put it on the Blanchard..



it's versatile! Large and small shops alike find this Blanchard, with 72" diameter magnetic chuck, ideal for fast, precision grinding of miscellaneous work.

it holds multiple small pieces or plates, castings and die blocks up to 80" across corners, directly on the magnetic chuck. Irregularly-shaped workpieces are easily held with simple fixtures. (Custom-built grinders of this type can handle work 30" high.)

it's fast—with a hard wheel, soft steel can be "hogged off" at a rate of 10 cubic inches per minute.

it's precise—with a soft wheel, hardened steel ways are regularly ground flat and parallel to .001", with surface finish of 5 micro inches!

No wonder shopmen say this Blanchard No. 42-72 is "tops for versatility"!

PUT IT ON THE

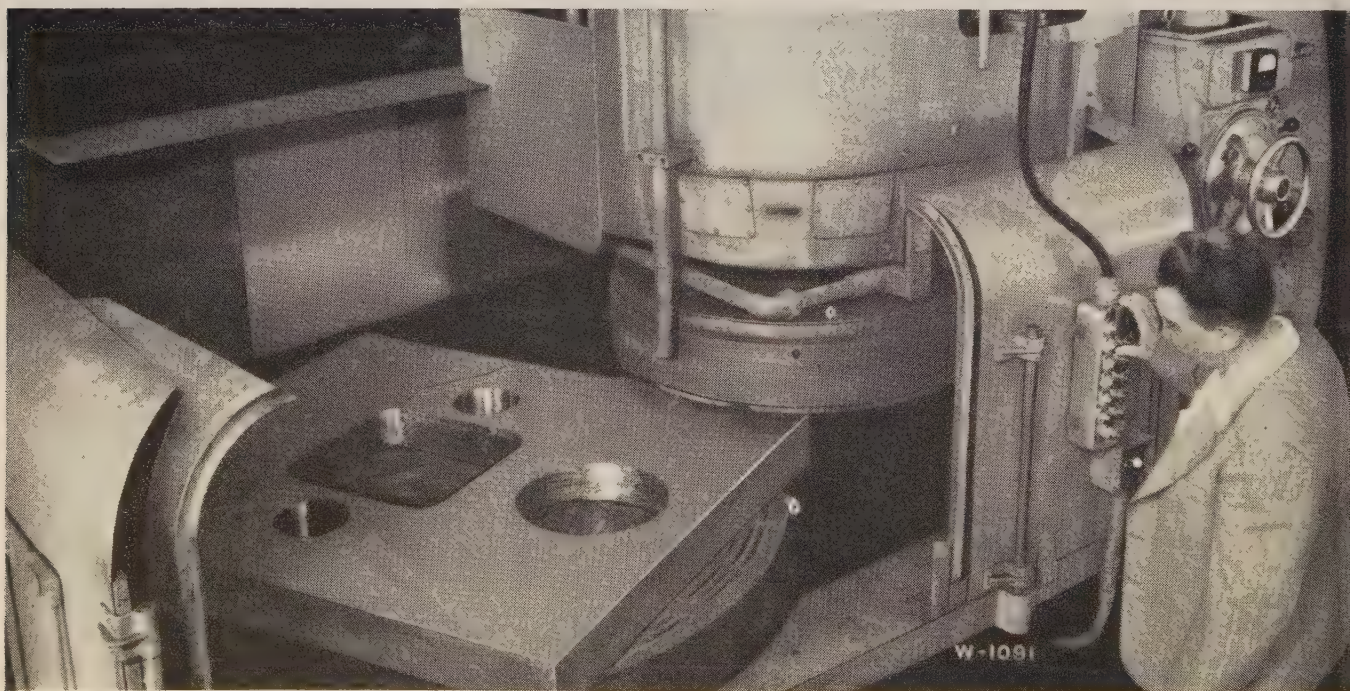


THE BLANCHARD MACHINE COMPANY

Send for free copies of "Work Done on the Blanchard" (fourth edition), and "The Art of Blanchard Surface Grinding".



64 STATE ST., CAMBRIDGE 39, MASS., U.S.A.



Technical Outlook

GAGE NEWCOMER—A bright future is predicted for ceramic materials as gage components. At the ASTE meeting in Los Angeles, R. F. Rea, Carborundum Co., pointed out that the cost of making the ceramic part is comparable to that of a steel part . . . precision is equal . . . gage life of ceramics is many times that of steel . . . material cost for ceramic is less. Another advantage: Gages are not affected by temperature changes.

DOWN TO EARTH—Chemical milling of aluminum parts for aircraft is out of the laboratory stage. It's being used in production at North American Aviation Inc., Downey, Calif. This process of sculpturing metals is also being tried on steel and titanium parts by NAA, developer of the process. It's a good bet that the technique will be widely used in aircraft, and other industries will probably pick it up. A big plus: Large areas of metal can be "machined" at one time.

THIN SKIN—Do you have a job for ultrathin, nickel-clad strip? A high-precision strip is made by American Silver Co. in thicknesses down to 0.003 in., widths down to 0.093 in. and tolerances ± 0.0001 in. The strip possesses good high-temperature resistance.

SULPHUR CRACKS—There's a direct relationship between hot cracking, low hot ductility and sulphur content of SAE 4340 steels. Cracking goes up with sulphur content, says Battelle Memorial Institute. The reason may lie in grain boundary conditions.

ATOMIC FREEDOM—Security should work for instead of against those wishing to enter the atomic field, says Francis K. McCune, a GE vice president. He urges: Make more unclassified information available, downgrade informa-

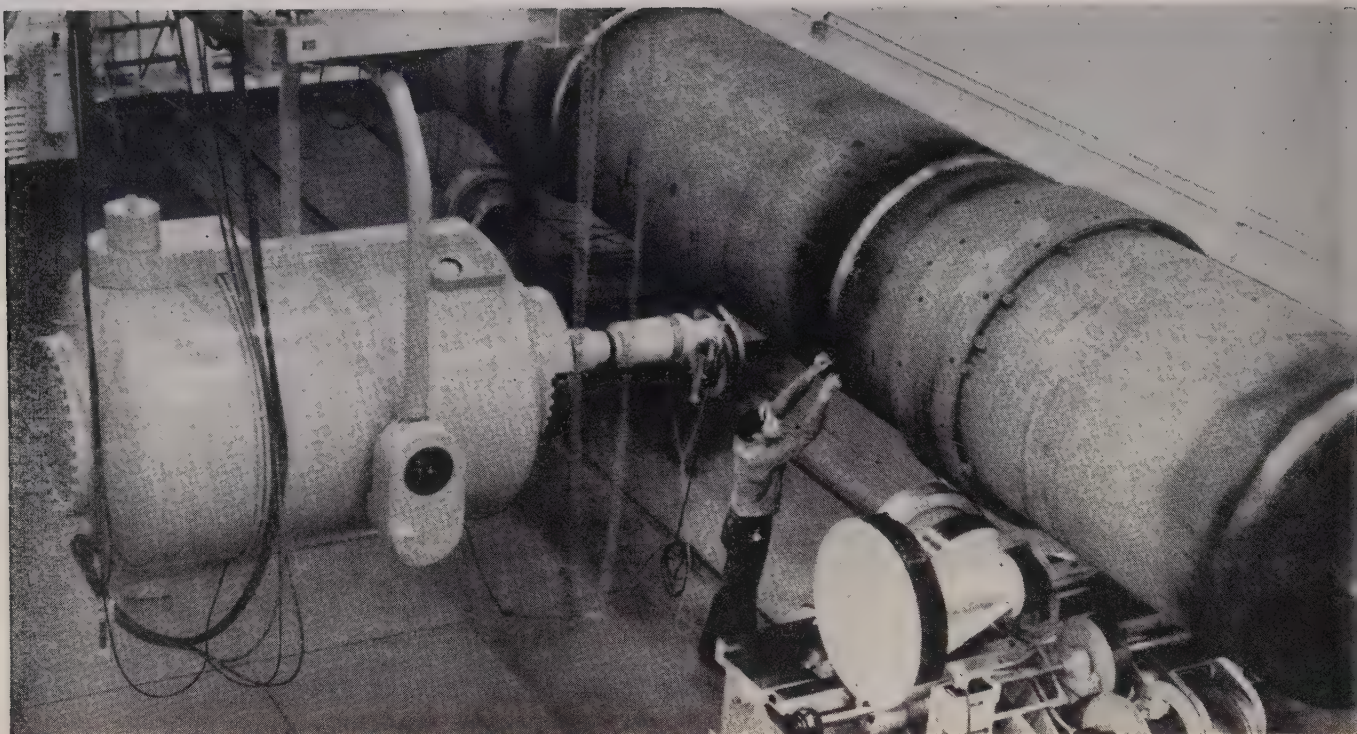
tion classifications, grant clearance for access to information, establish formal clearance procedures for access to people and plants doing atomic work, grant more freedom in the use and exchange of information. Mr. McCune warns: "The security system should not restrict by compartments what people can study and examine. If it does, technical progress will be hampered."

POWDER PROGRESS—Special machinery offers wide-open opportunities for metal powder. A textile machinery manufacturer finds he is using more than 200 different metal powder parts at a considerable saving over former production methods.

HOW MUCH STICK?—A nondestructive testing method for adhesive bonds is taking the guesswork out of adhesives at Convair's Fort Worth, Tex., plant. It's a new application for ultrasonics.

BEHIND ON QUALITY—The aircraft industry's demands for better steels are outrunning the steel industry's steady quality improvements. That was the conclusion of a technical symposium staged by Solar Aircraft Co., Des Moines, Iowa. Rising quality standards, higher temperature requirements and the government's pressure for the use of more nonstrategic alloys are just a few of the reasons why aircraft builders are concerned.

BOOSTING TITANIUM'S TENSILES—Just a tiny amount of hydrogen in titanium can run its tensile strength down to 60,000 psi. That's why Kinetics Corp., Boston, leans so heavily on its high vacuum annealing furnaces. After heating under vacuum, the same batch of metal can be increased to 160,000 psi. Aside from the greater strength, the metal takes on better ductility and fatigue resistance.



Inspectors at B&W check a circumferential weld with the 2-million-volt unit

X-RAY INSPECTION:

Guarantee of Quality

X-ray and welding go hand in hand. In the boiler industry where structural soundness is a necessity, fabricators find this nondestructive testing technique essential

DON'T SELL industrial x-ray short. Its versatility makes it an indispensable tool in metalworking.

Long recognized for their efficiency in detecting tiny flaws in metal structure, x-ray can prevent the same flaws when they are employed to guide the processes which produce them.

Authority—The technique guarantees quality products, say officials at Babcock & Wilcox Co.'s Boiler Division in Barberton, O. The company has been using x-ray inspection and testing for 25 years.

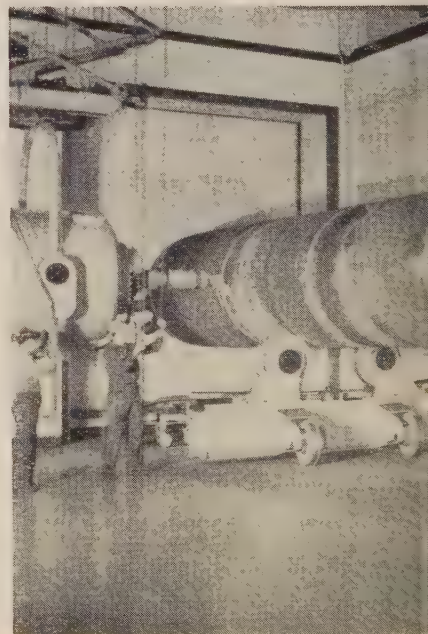
From 1932 to 1934 B & W carried out one of the most extensive welding inspection projects in the world—the x-raying of every inch of weld metal in the penstocks of Boulder Dam, with an oil-immersed 300-kv unit. More film was used

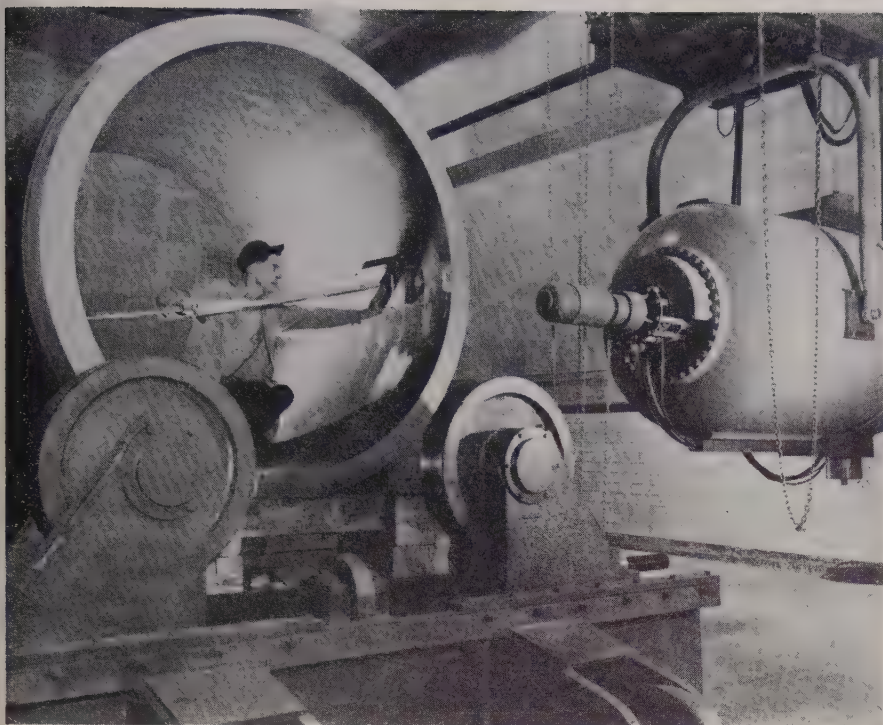
on that one job, say company officials, than the amount which had been used in the world up to that time.

Applications—B & W pioneered in the welding of pressure vessels. The company was among the first to adopt x-ray inspection as a basic requirement for all welds.

Since pressure vessels require castings as fittings, B & W maintains a foundry. Here x-ray is indispensable in guiding mold design and casting procedure. It insures that design and procedure will yield the best results without flaws before quantity production begins.

Vital Guide—An unusual application of x-ray at B & W was to study whether the proper relationship was maintained between two tubes — one within the other —





Employee secures film in boiler drum in preparation for radiography

throughout their lengths and especially around bends. X-ray became vital in guiding the bending of these concentric tubes. Part of a reactor to heat steam in the development of atomic energy, this job had virtually zero tolerance.

X-ray is also employed to pin down or correlate evidence produced by such other nondestructive testing methods as ultrasonic and magnetic particle inspection.

B & W guides the development of new welding procedures and alloys, and solves special problems of its own with x-ray.

Special Problem—When the Refractories Division discovered some of its firebricks exhibited flaws, engineers constructed a fluoroscope. With the aid of a screen and mirror, a 100 per cent inspection was performed. Location of the flaws, as revealed by fluoroscopic x-ray,

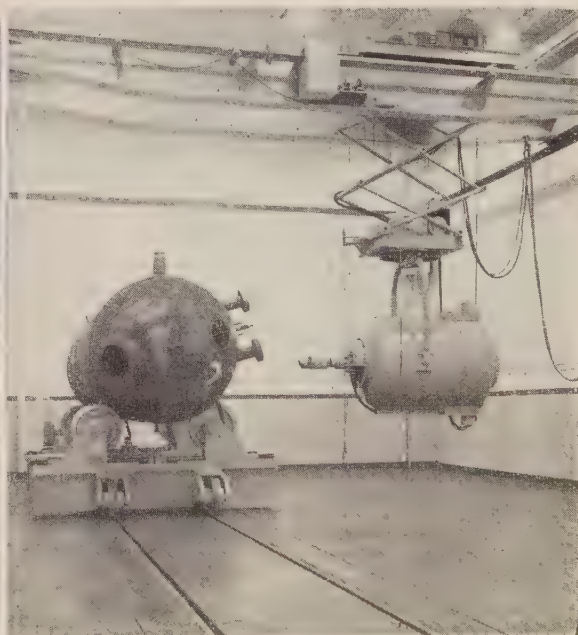
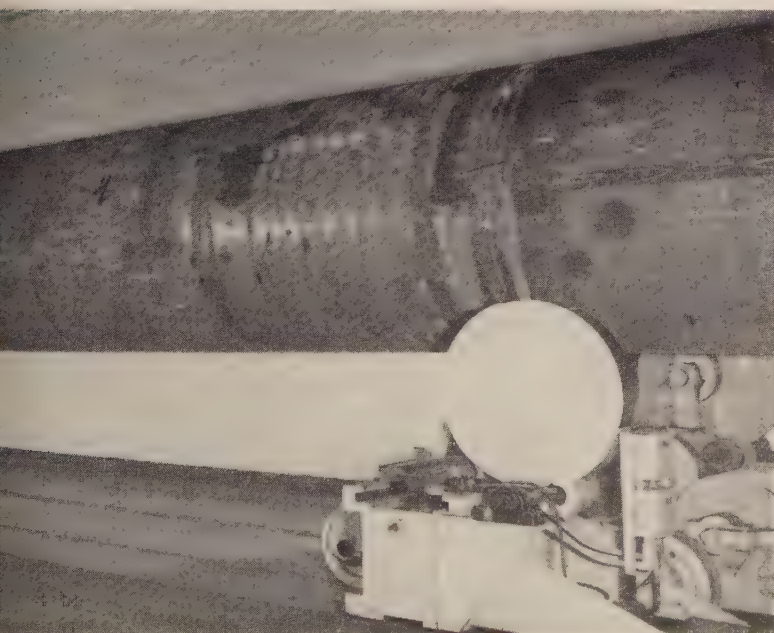
helped the division correct the temporary but troublesome situation.

The largest x-ray unit in the Babcock & Wilcox work's inspection department is a General Electric 2-million-volt machine. With it, company radiographers have achieved a sensitivity of 0.5 per cent on rolled steel sections 7 in. thick. This means a flaw only 0.5 per cent the thickness of the metal being x-rayed is discernable on the processed film.

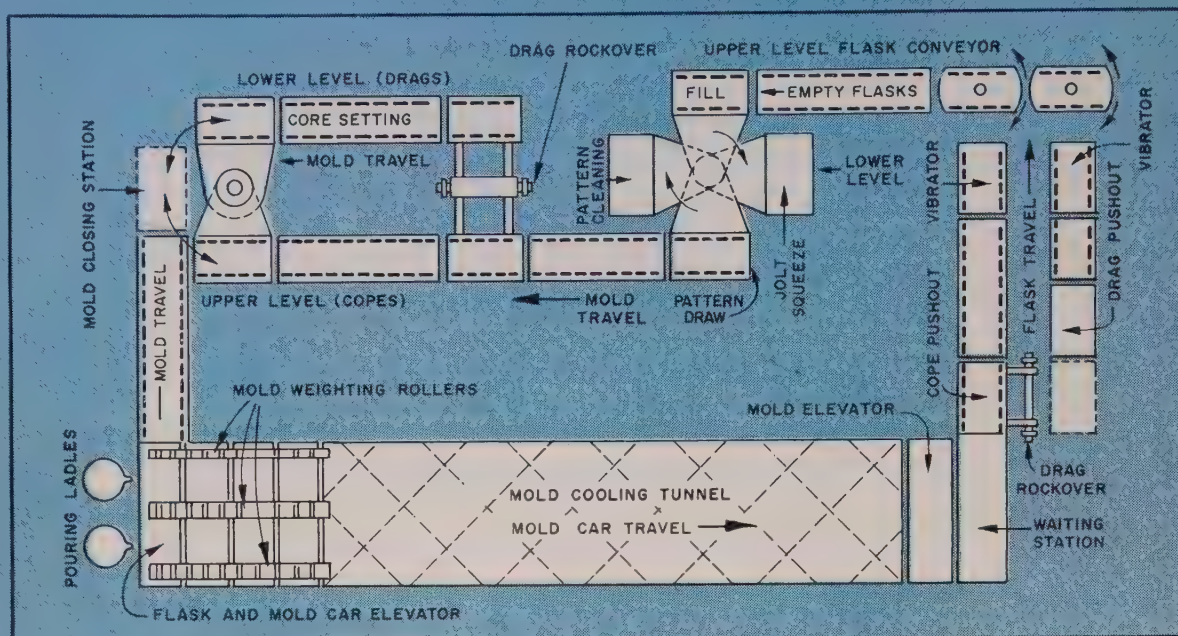
Technique—Fine-grain film is used to secure maximum definition and detail. When shooting at a target-film distance of 48 in., using 1.5-milliamperes, type-A film and a lead-filter screen, exposure time is about 8 minutes on a 7-in., rolled-steel section.

In its nine plants, B & W has nine x-ray units. They range from 2-million-volt machines to units operating at 220 volts. Other items include radioactive sources of radium, cobalt, cesium and iridium; magnetic particle, fluorescent and dye penetrant equipment; mass spectrometer leak detectors and four ultrasonic inspection instruments.

Soon to be acquired will be a 1000-curie source of cobalt-60, equal in exposure speed to a 1.5-million-volt x-ray unit. Although its role in the B & W inspection picture remains to be determined, officials are confident it will further their quest for quality.



Workers position the 2-million-volt unit to x-ray a large boiler Unit in position for x-raying large pressure vessel



Automation Molds a Foundry Line

How automatic can a foundry get? A pair of new cyclic molding-casting-shakeout lines in a malleable iron foundry comes close to no-hands operation

A BIG CLEVELAND malleable iron foundry is letting machines do the dirty work.

Eberhard Mfg. Division of Eastern Malleable Iron Co. has just put more than \$500,000 into two automated molding lines. They perform molding, closing, weighing, cooling, stripping and shaking out without hand labor. Setting chaplets and cores are about the only operations that aren't handled automatically. Automatic pouring is being considered although it's now done by remote control.

Closed Circuit — Osborn Mfg. Co., Cleveland, designed each closed circuit line around its automatic molding machine. The lines take up a floor area of 100 x

72 ft and can turn out 300 molds an hour, with a casting weight range from 1 oz to 2½ lb. Castings per mold vary from 12 to 60, production rated from 1 to 10 castings a second.

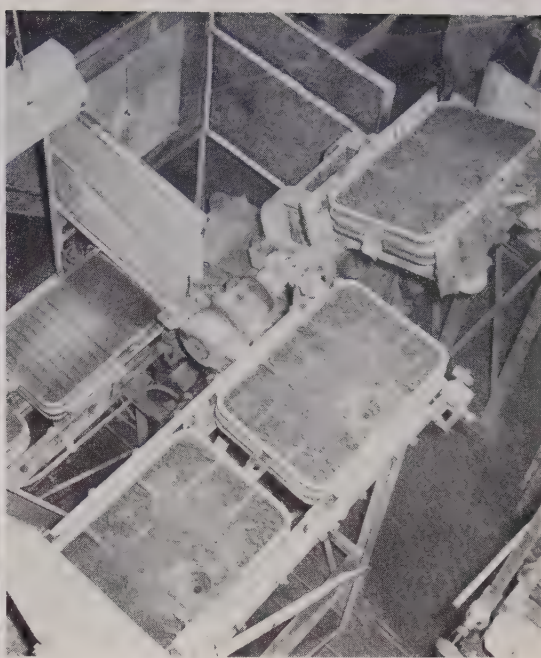
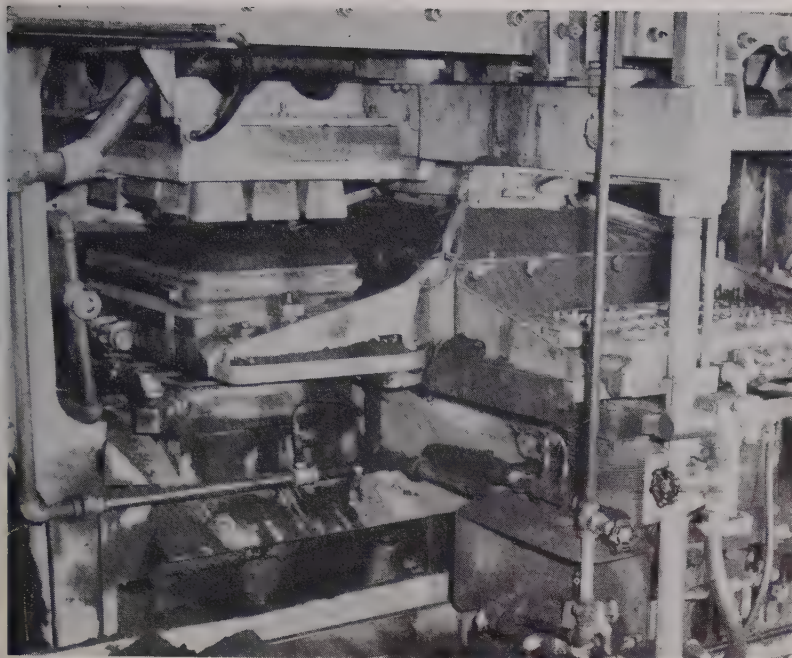
Conventional foundry practice would require a floor area 450 x 72 ft to turn out the same number of molds per hour. Conventional foundrymen will be few and far between.

Labor—One line could be operated by one foreman, one oiler, one pourer spelled by two laborers, two core setters when needed, two maintenance men and two operators, but when the second line gets into operation some of these will be able to double in brass.

The lines are set up for push button operation and do most of their own "thinking" when set in motion, but that means operators must have special skills. They must be versed in electronics and mechanics and know the system inside and out.

Equipment—Major components, in addition to the automatic molding machine, are a core closing device, pouring station with a system of rollers for weighing molds, mold-cooling tunnel and automatic shakeout. Connecting these are conveyor and other handling elements (see diagram).

The entire system is powered by air at 100 psi, except for pouring which is hydraulically actuated.



Cycle starts at the molding machine where alternating cope and drag flasks meet their patterns. The machine fills the flasks, jolt squeezes them, draws and cleans the patterns and ejects the flasks

Drag rockover separates cope and drag mold halves. On lower conveyor, cores are fitted if needed. Copes and drags move parallel in this part of the line and meet at the closing machine

Interlocks and controls are electrical and pneumatic.

Handling equipment is built in multiples of flask length. Movement of one flask length at a time is accomplished by pneumatic pushers; as a flask is pushed, it pushes the one in front of it.

Around the Horn—An air cylinder shoves empty flasks, cope and drag alternating (upper right of diagram) one at a time into the 4-station rotary molding machine. Stations are fill, jolt squeeze, pattern draw and pattern clean. Half-molds move off the machine after pattern draw, while the half-patterns index to the cleaning station. The machine will handle two different sets of patterns and whip through the sequence five times each minute.

Farther along the line, drags are picked up by a rockover device, which turns them cavity-face up and deposits them at a lower level for core setting. Copes on the upper line and drags on the lower core setting line move at the same rate into a mold closing device, which swings copes over drags and fits them together.

Pouring—The next step is pouring. Two molds can be poured simultaneously, and when the second line is in operation, this number will be upped to four. The

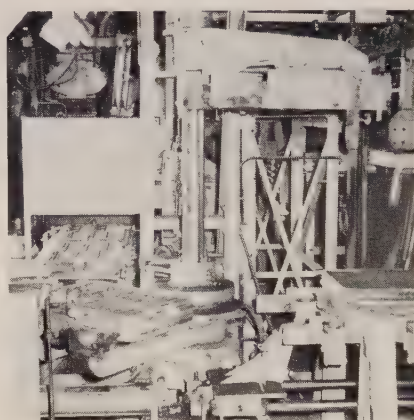
pourer sits in a raised booth with a large observation window and operates the 300-lb capacity ladles by pushbutton control. Molds now produced can be poured in 9 seconds.

During pouring and cooling, molds rest on a wheeled car which rises on an elevator and presses the molds firmly against rollers which act as weights. Cars moving away from the pouring station continue under the rollers until the metal has solidified. Cars then pass into a cooling tunnel.

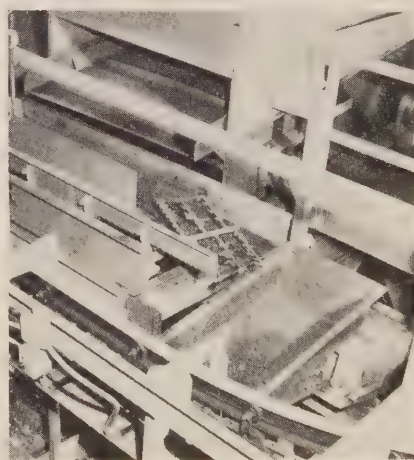
To Shakeout—Leaving the cooling tunnel, cars are lowered by another elevator and pass under the cooling tunnel back to the pouring station while molds continue forward to a waiting station. Next step is a rockover which removes the drags and lifts them to another line.

From this point copes and drags move on parallel lines through shakeout. Castings slide down vibrating chutes to boxes riding on a monorail conveyor and sand falls to a belt conveyor. After passing over a magnetic pulley, sand is picked up by a bucket elevator which deposits it in a storage hopper.

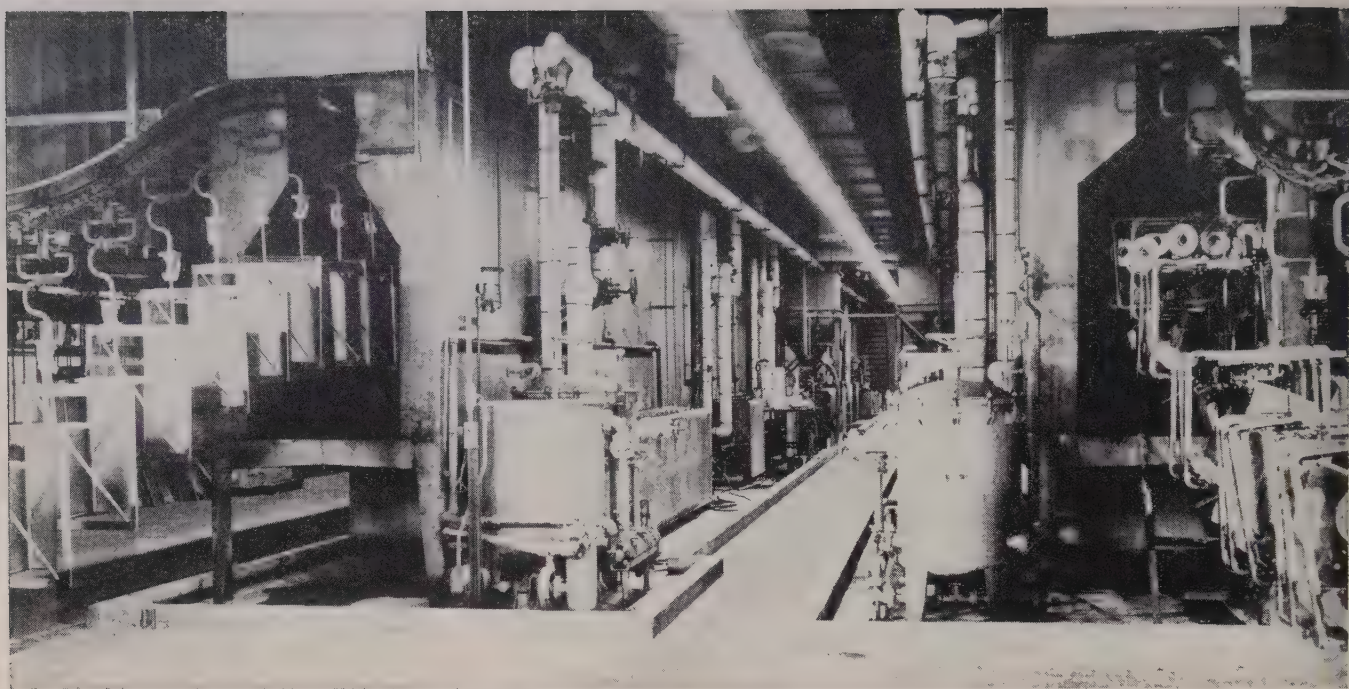
The empty flasks slide forward onto turntables which line them up in alternating sequence ready to start through the line again.



As a drag swings under on the closing machine a cope swings over and is lowered onto it. Closed mold ejects to the right



Copes and drags are separated by a rockover at shakeout station. Vibrating conveyors deposit castings in boxes riding a monorail conveyor



First comes the seven-step cleaning and Bonderizing section . . .

Turning Paint Into Profit

That's what happened when General Electric figured up the savings on its new continuous finishing line at Louisville: Almost twice as many units per gallon of finish

GETTING 75 to 85 per cent more paint mileage from a finishing line would be welcome news to any manufacturer. When the manufacturer is General Electric's Appliance Division, savings really mount up.

Continuous lines for finishing washers and dryers at its Louisville, Ky., plant have done just that. Where the washer rate used to be 9.74 units per gallon of paint, it's now 17.97; the dryer rate has jumped from 5.49 units to 9.56 per mixed gallon of enamel finish.

Mechanization and improved processing account for increased production, fewer rejects and lower costs.

Straight Through—From the time parts to be painted are loaded on the monorail conveyor until they emerge at assembly points some 4 hours and 10 minutes later, the process is continuous and straight through. There is no banking of parts, no extra handling and little possibility of damaging parts in process.

First comes the seven-stage Bonderizing machine, a 5-minute dry off in a 300°F tunnel and then a 30-minute cooling cycle. Primer is next in line. This is done in a flow-coating chamber whose spray nozzles effect complete coverage of the parts. Work next passes through a drip chamber.

Electrostatic Painting—After a

30-minute baking and a prime sand area where primer defects are sanded out, cabinets are automatically repositioned from 48 to 36-in. centers for finish application. Inner and outer doors are grouped on 40-in. centers.

Before the line passes through the 44-ft electrostatic spray area, dust is blown off and the outside surfaces get the "tack rag" treatment. Some of the irregular surfaces get a hand spraying of finish coat to insure extra coverage when the parts are electrostatically painted.

Two triple-headed Ransberg No. 2 process heads apply finish from each side. Another triple head coats the underneath surfaces.



followed by a run through drying oven and cooling loop . . . Primer is then flow-coated and allowed to drip off.

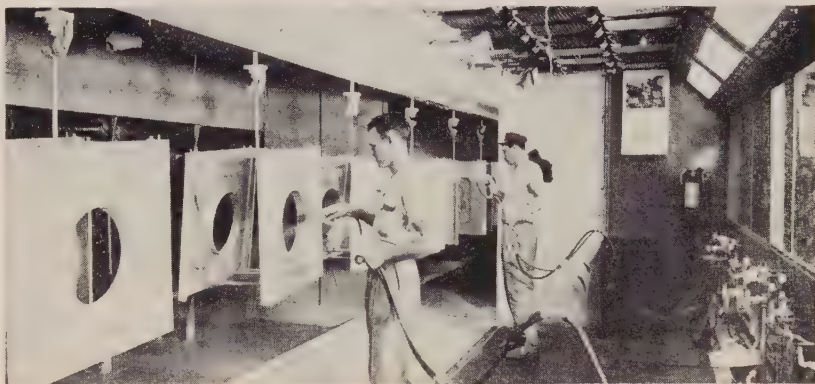
The Windup—A 1 1/3-mil finish is applied in a double pass, with a 1 minute flash off between passes. There is also a 5 minute flash off before the pieces travel into the 320°F baking oven for 36 minutes.

After baking, the finished parts travel to the finish inspection station; then they are transferred, along with the black parts coming off another line, to the assembly conveyor line.

Painted parts for the washers and dryers are classified broadly as "white and black." Treatment in the separate lines is similar except that black parts are flow-coated with both primer and finish enamel.



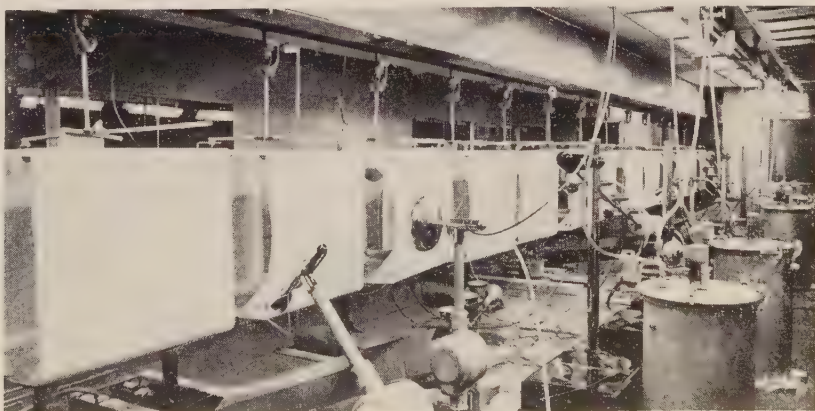
After baking and sanding, parts are ready for finish. They move into the area, below, while enameled and baked cabinets move out at the top



Irregular shapes get a reinforcing coat before electrostatic coat is applied

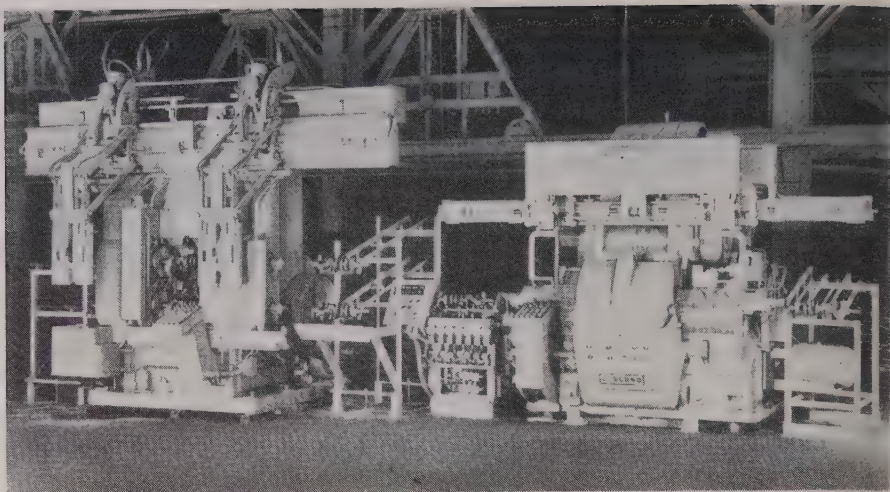


Hanger racks are stripped of paint when immersed in molten salt at 900°F in 10 seconds



Five triple-headed Ransberg No. 2 process sprayers put the 1.33 mil coat on in two flashes as sections move through

New automatic
crankshaft-turning
unit designed to
fit into the
customer's automation
line means a . . .



Right to left: LBA automatic, line-bearing, center-drive lathe; Sheffield gaging machine; PBA automatic two-spindle, pin-turning machine

Faster Turn for Cranks



Close-up of cranks in PBA. Pin bearings have been turned, steady rest caps opened. Cranks are about to be picked up by automatic loader hooks

FIFTY-FIVE crankshafts an hour. That's the production rate of a new automated unit which completely turns and faces precision-cast, V-8 crankshafts.

Three pieces of equipment comprise the automatic unit which was developed by the R. K. LeBlond Machine Tool Co., Cincinnati. One operator can handle two of them.

How It's Done—An LBA automatic, line-bearing, center-drive lathe turns all five main bearings, plus flange and pilot, sprocket diameter and front end simultaneously.

The crank then transfers to a Sheffield gaging machine which gages the diameters of Nos. 1, 3 and 5 main bearings and the thrust wall width of No. 3 main bearing.

From here the crank goes to the

PBA automatic, two-spindle, pin-turning machine which turns all pin bearings on two crankshafts simultaneously.

How It's Possible—A production rate of 55 crankshafts an hour, including allowances of time to change tools and make machine adjustments, is made possible by the precision, shell-molding technique by which crankshafts are cast to close tolerance.

All machine motions are electrically and hydraulically sequenced for continuous automatic operation. A console-type push-button operating station includes indicating lights to signal certain conditions throughout the cycle. Manual control of most functions is provided for setup, tool change, repair or adjustment.

Before reaching the turning equipment, crankshafts are prepared by centering and milling the ends and locating spots on three lobes.

Operating Sequence—Automatic loading hooks of the line bearing machine pick up the crank and deliver it to the chuck. Centers insert hydraulically, the left center moving in faster than the right to position the crank.

Rough and finish tool blocks traverse, feed, dwell and retract from front and rear simultaneously. The machine stops, with the lock pin determining the correct rotational position. It un-

chucks and withdraws centers.

Hooks unload the turned crank and place it on the V-blocks of the gaging unit. If acceptable, it ejects to rear automation; if not acceptable, the crank remains in gage and a red light on the panel indicates the faulty portion. The LBA stops until adjustments are made and the gage is cleared.

Pin-Turning Machine — Cranks with main bearings turned and gaged are delivered to the pickup station where automatic loader hooks pick up and deliver to chucks of the two-spindle, pin-turning machine.

Main bearings are engaged by chucks which drive by three milled spots on the crank lobes. Ball-bearing rollers contact the sides of the thrust bearing to position crank endwise.

Tools are carried by four tool units actuated orbitally by a lower and upper master crankshaft and fed into the work by a massive cradle. As the cranks rotate, tool blocks move around the pin bearings as they cut. The cycle is the same as on the other machine—traverse, feed, dwell and retract.

The entire setup is controlled by various signal devices which indicate the presence of cranks to be machined at the starting point, as well as absence of previously machined crankshafts at the outgoing point to clear the second machine for further production.

REVERE

90-10 Cupro-Nickel
*helps protect
aviation gasoline*

Arc welding of the Filter/Separator.



Gasoline Filter/Separator made by Bendix-Skinner Division almost entirely of Revere 90-10 Cupro-Nickel.

It has been found that minute traces of water in aviation gasoline can stop the engine when flying in low temperatures, as at high altitudes, or over the pole. The amount of water involved is so small that it would not bother an automobile carburetor. To remove it for safe flying requires a special Filter/Separator. All metal parts going into this filter were specified to be 90-10 Cupro-Nickel. One of the contractors for the U. S. Navy is the Bendix-Skinner Division of the Bendix Aviation Corporation, Royal Oak, Mich. When Bendix-Skinner obtained the order, it called in Revere's Technical Advisory Service. A complete study was made of the blueprints and specifications, in order to set up the most economical purchasing schedules. When production began, personnel from the Welding Section of the Research and Development Laboratory maintained by Revere in Rome, N. Y., went to the Bendix-Skinner plant to share their know-how with the welders, so as to be sure the welds would pass strict inspection, yet be made at competitive costs.

Cupro-Nickel, 90-10, is highly resistant to corrosion and other forms of attack. Because it contains only 10% nickel, it is more economical than the richer alloys, yet in many applications just as satisfactory. We suggest you look into it.

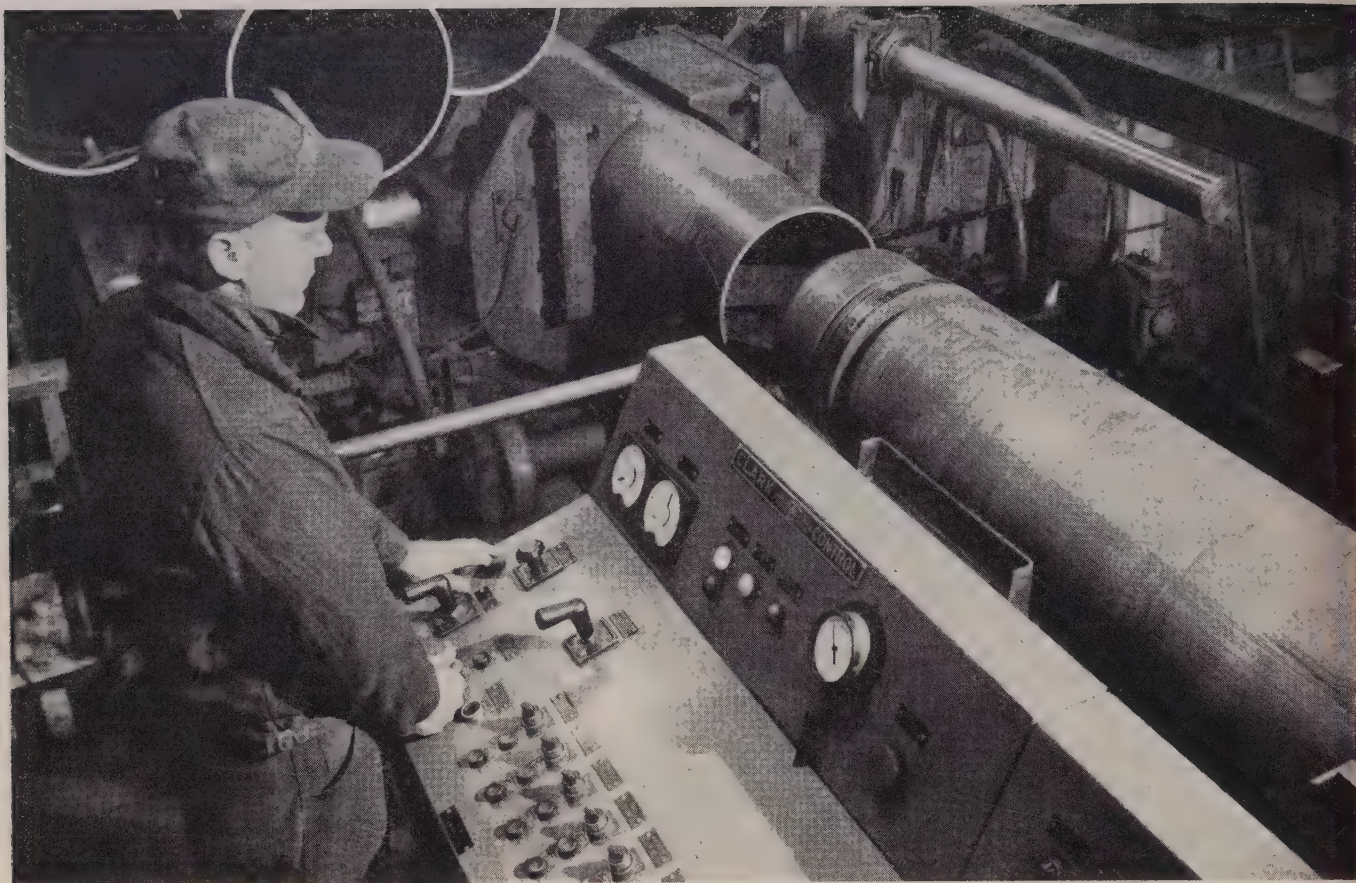
REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

*Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.*



New cold expanding machine gives seamless pipe . . .

Extra Strength from Same Analysis

COLD EXPANDED seamless pipe is rolling out of the Lorain Works of U. S. Steel's National Tube Division with a new set of physicals. It may look the same and carry the same analyses, but this pipe can take 15 to 20 per cent more pressure.

Cold working is the answer. After several years of experimental work by National Tube and Aetna-Standard Engineering Co. engineers, they've come up with a machine that adds a new wrinkle to the business of making seamless pipe.

The Wrinkle — Expanded pipe isn't new. There are a number of installations utilizing water pressure to bring pipe to required size—an almost negligible change in physicals results. Another tech-

nique involves the use of mechanical expanders which move through pipes in small increments, leaving a series of small wrinkles the length of the pipes. The new machine utilizes a fast-moving ram which pushes a tool-steel expander through in one, smooth, continuous motion.

"The new process maintains the complete reliability of seamless pipe and adds uniform high strength with excellent weldability," points out H. J. Wallace, National Tube's sales vice president.

"Builders of large diameter pipe lines have need for a product which combines high strength with maximum safety, and the balanced properties of the new seamless fill that need," he continued. Of significance is that

extra strength is achieved without adding manganese which would affect weldability.

How It Works—Preparation of seamless pipe for cold expansion begins at the two rotating cutoff machines which are unique. Like the plumber's giant pipe cutters, these machines automatically position and grip the pipe while the six-tool rotating head trims pipe ends four to six times faster than standard cutoff machines. All are 16 to 26-in. OD pipes, with up to 1½-in. wall thicknesses!

Next, the 60-ft lengths of pipe are kicked up onto a bed from which they can roll into position for expanding. An expanding plug unit, shaped like a big thimble and weighing nearly 1000 lb, is engaged by the end of the

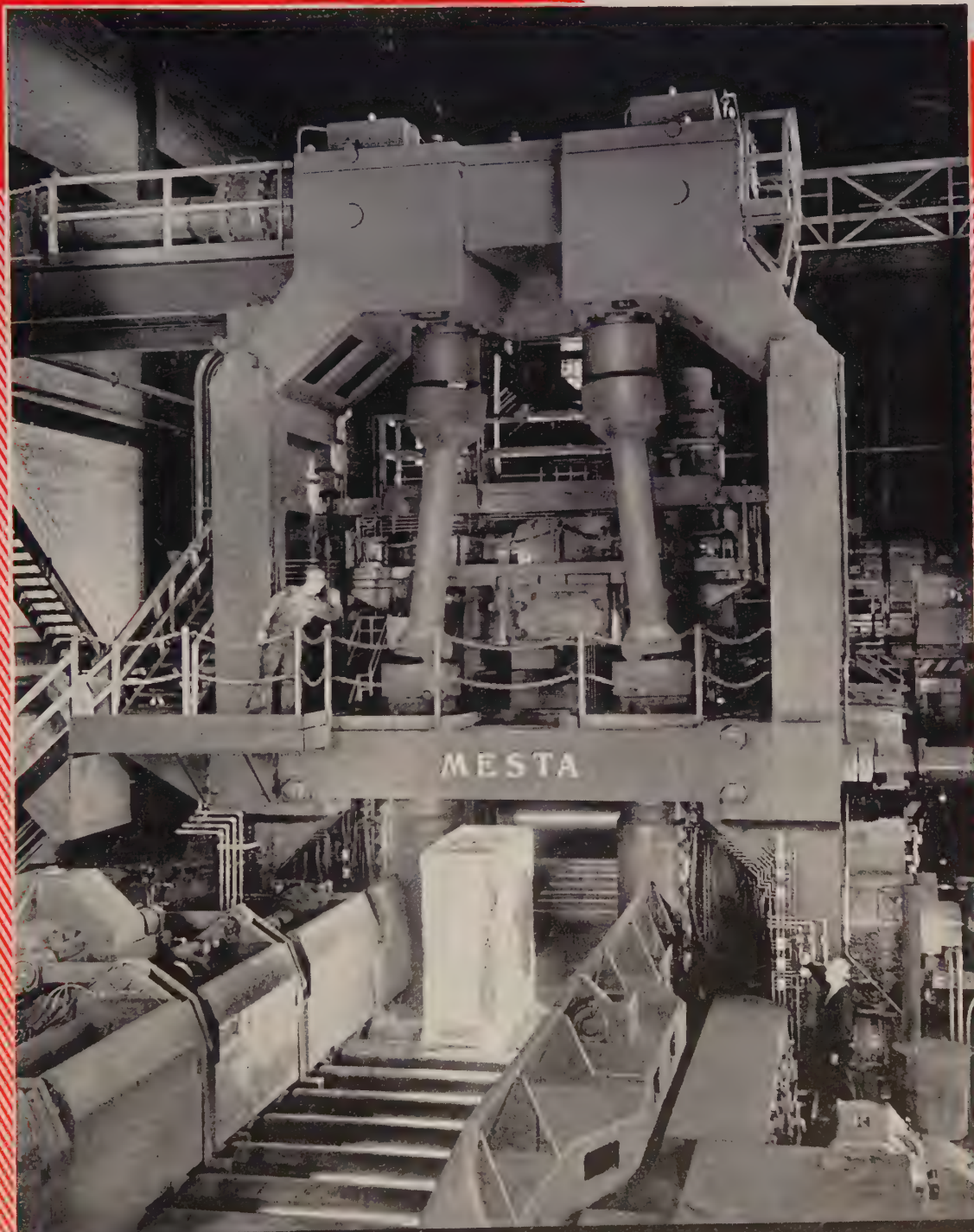
Designed and Built by
MESTA

SLABBING MILL

**for Great Lakes
Steel Corporation**

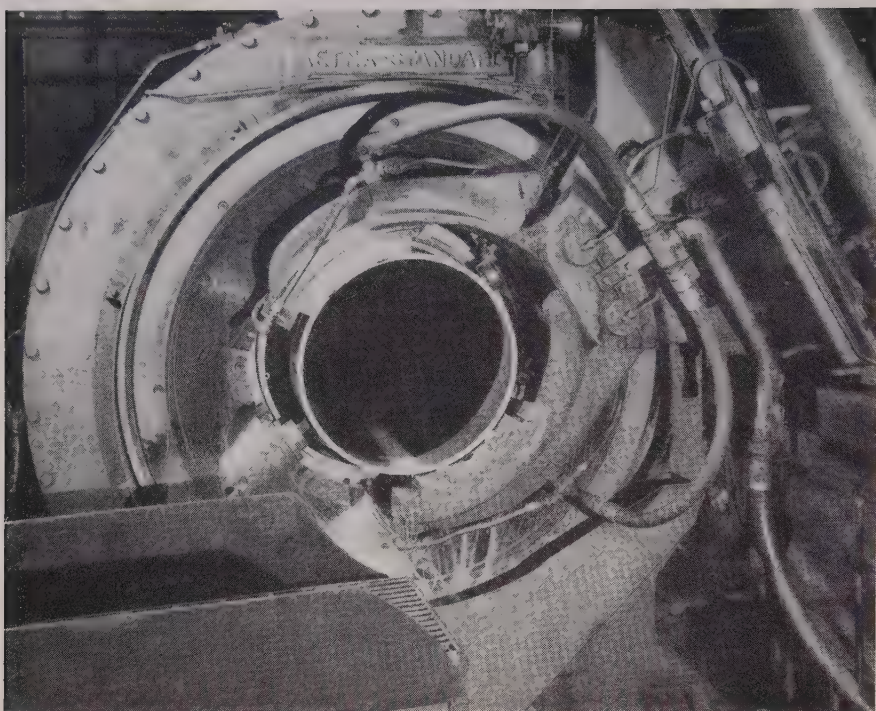
DIVISION OF
**NATIONAL STEEL
CORPORATION**

Rolling 20 Ton Ingots into slabs on a Mesta
45"x 90" Universal Reversing Slabbing Mill



DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS

MESTA MACHINE COMPANY • Pittsburgh, Pa.



First comes the rotating cutoff machine that trims the pipe ends. Smooth edge prevents any tearing when the expander is pushed through

long mandrel bar. The two-piece expanding plug unit consists of a heavy point, followed by a highly machined iron alloy ring which is sized to do the expanding. To withstand the pressures, the mandrel bar is itself made from 14-in., heavy-wall seamless pipe.

Moved by a chain drive, which in turn is powered by a 500-hp

motor, the mandrel can exert a force of 300,000 lb as the plug is forced through the pipe. A water-soluble lubricant is applied to the inside surface of the pipe through holes in a nipple that extends ahead of the expander.

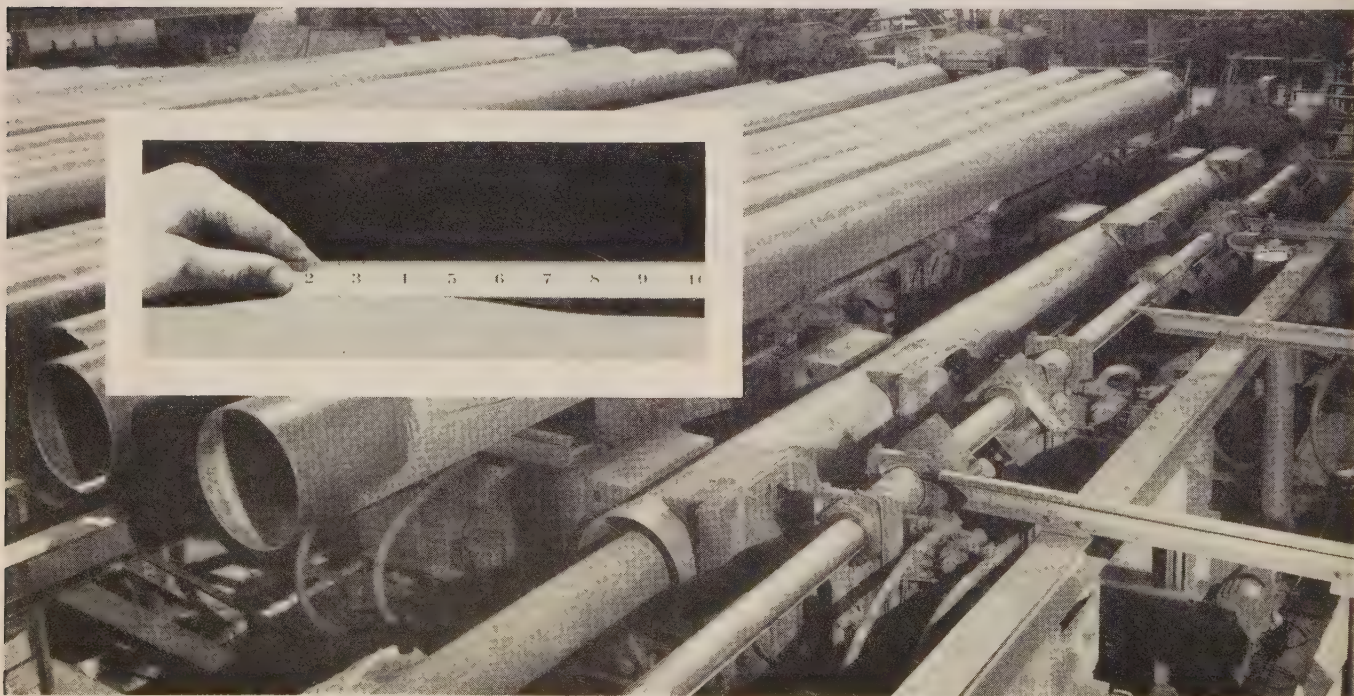
Five Plugs—After leaving the opposite end of the pipe, the expanding plug drops off the man-

drel bar onto an elevator which lowers it to a conveyor for transport back to the starting point. Another elevator raises the plug at that end for the start of the next thrust. During full operation, five plugs are required to maintain smooth operation, four of them being in transit to the starting point at any one time.

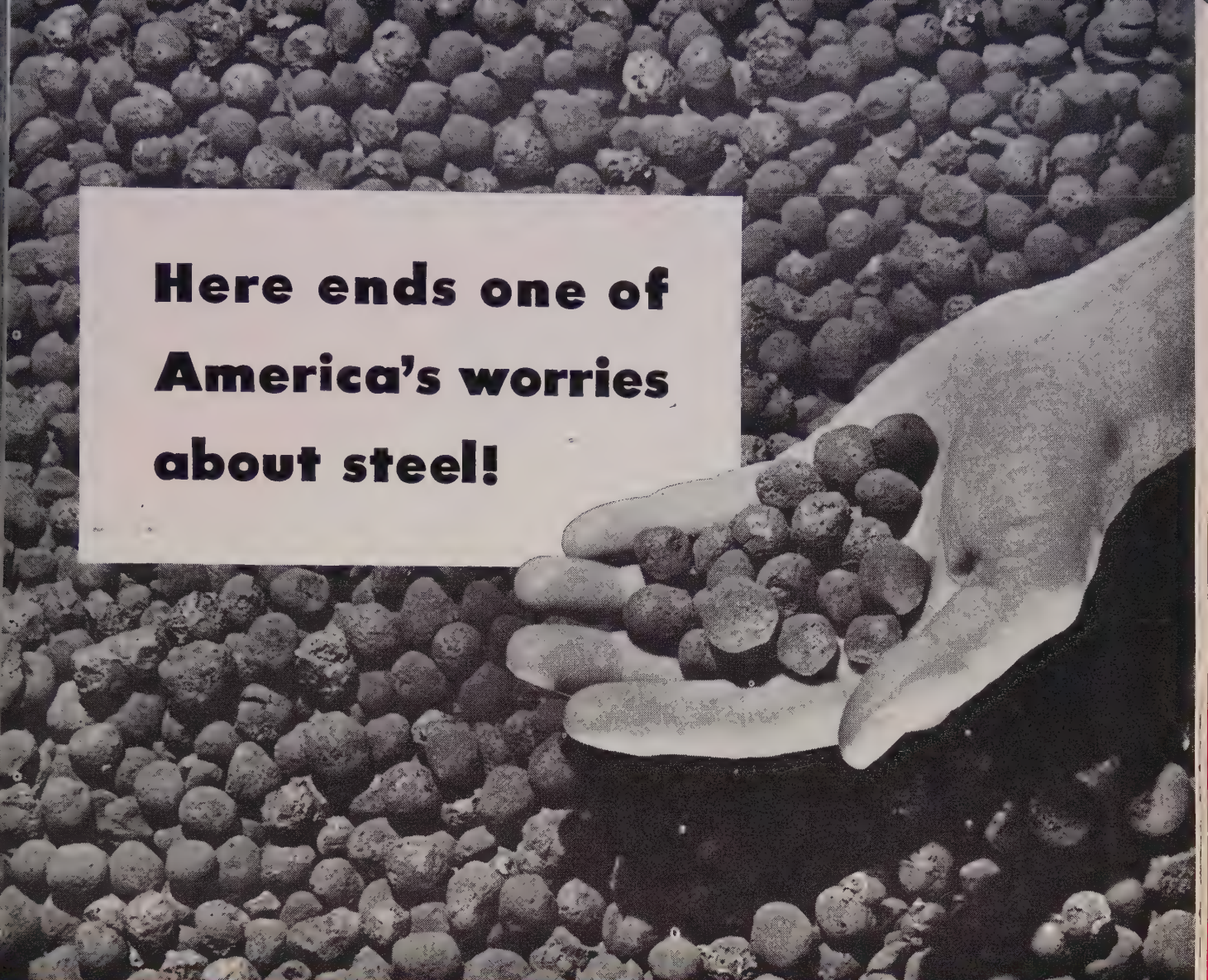
The expanding process shortens the pipe length by several inches, depending on the size of pipe being expanded and the degree of expansion. The amount of expansion will also vary; a 24-in. end product, for instance, would start out as about a 23 1/3-in. pipe. Wall thickness changes only slightly, most of the expandable material apparently coming from the pipe length rather than its girth.

Inspection and Testing—All pipe, whether expanded or not, next goes through the roll straightener and then to individual visual inspection. The final operation is pressure testing, using hydrostatic pressure far in excess of field requirements.

The first order of cold expanded pipe will be completed in two months. It is destined for use in construction of a 24-in. gas transmission line that will span some 250 miles of densely populated areas in the eastern U. S. with greater safety.



Expander plug is pushed through in one continuous motion. With the motion stopped (see inset) note difference in OD



**Here ends one of
America's worries
about steel!**

THESE "iron marbles" are opening a vast new source of high grade raw material for the iron and steel industry.

Steel men have worried for years about the dwindling supply of easily-accessible 52% iron ore in the Mesabi range and the rapid depletion caused by war-time and postwar production. But something important has been done about it.

McKee engineers collaborated on a method for producing heat-hardened pellets from low-grade taconite, the iron-bearing rock of which the Mesabi range is largely composed. The new product, containing 60 to 65% iron, is superior in almost every way to the highest-grade ore ever mined in the area.

This is a typical example of forward-looking McKee engineering.

50th ANNIVERSARY



**McKee
Engineering
Services**

Arthur G. McKee & Company • Engineers and Contractors

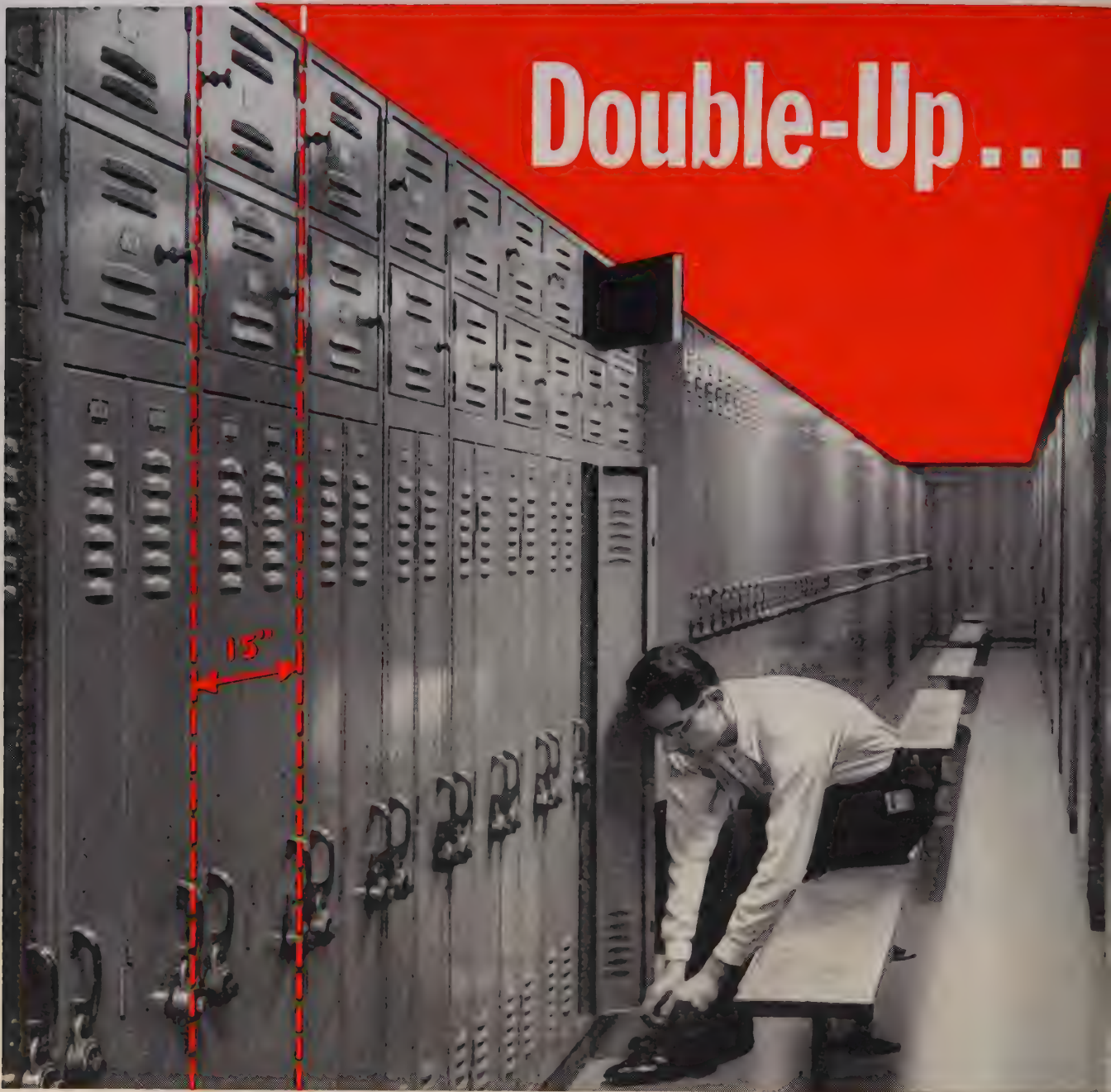
Headquarters: McKee Building • 2300 Chester Avenue • Cleveland 1, Ohio

Offices: New York • Tulsa, Oklahoma • Union, N. J. • Washington, D. C.

British Representatives of Metals Division: Head, Wrightson & Co., Limited

Canada: Arthur G. McKee & Company of Canada, Ltd., 372 Bay St., Toronto

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ADDITIONAL SPACE-SAVING ECONOMY is provided by Republic's complete line of Materials Handling Equipment. It fits in with whatever type of system you use. Boxes, Skid and Pallets keep materials moving, stack readily, save floor space. Pallet Racks permit palletizing of bulky, odd-lot, fragile materials. You load or unload from either side without restacking. Wedge-Lock Steel Shelving supports tremendous loads with no sway, sag or buckling. Mail this coupon for further information.

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It's the ideal locker where space must be conserved—or utilized to obtain the maximum number of locker accommodations.

A standard 15" in width, the Republic "Space-saver" two-person locker, made by the Berger Division, provides separate compartments for two people in no more floor area than that required for one large individual single-tier locker. And yet the occupant has ample room to store his street wearing apparel and other personal effects.

Each compact locker is equipped with Berger's unique pre-locking door. The door operates with either a built-in lock or a padlock. It is designed to provide locked security the instant it is closed. When a padlock is used, for example, simply re-

lock it in the loop immediately after the door is opened. There's no need to rely on memory to safeguard belongings once the door is closed. There's no separate locking of the hat compartment to bother with, either. When closed, it locks simultaneously with the lower door by a foolproof innerlocking device.

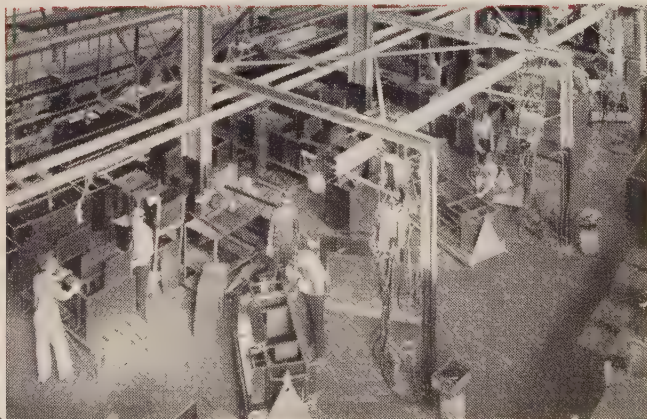
Modern steel lockers that provide clean, safe storage for clothing and valuables can be a powerful aid to good employee relations. Investigate Berger's big line of quality lockers. Let Berger, the world's largest supplier of steel storage facilities, help you with your design, engineering or installation problems. Call your local Berger Sales Office. Or send coupon for descriptive literature.

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SAVE SPACE AND INVENTORY COSTS on steels for tools, like these milling cutters, by using Republic's Tool Steel Warehouse Service. Warehouses in Detroit and Cleveland carry complete stocks of tool steels, automotive die steels, precision-ground flat stock, cold-drawn shank steel. A phone call brings what you need in a hurry, whether it's one piece or a truckload. Questions on steels, dies, heat treating and machining are answered expertly and promptly by our tool steel metallurgists.

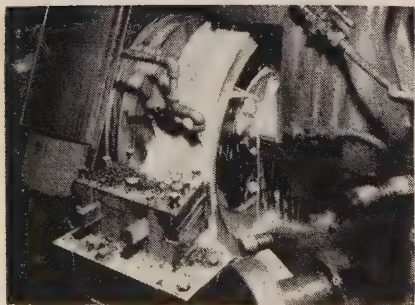


ELIMINATE PLANT OVERHEAD AND LARGE TOOLING INVESTMENTS by using the Berger Division's production facilities to fabricate your product. Berger's specialized service is complete, from engineering through fabrication, finishing, packing and shipping. A large stock of standard tools, dies and equipment is also available. As soon as a sketch or blueprint is finished, send to Berger with complete specifications. They'll advise promptly what can be done. Mail coupon for Bulletins 793 and 908.



Facing this steel forging at speeds from 280 sfm down with one tool shows how . . .

New Carbide Cuts Tooling Problems



Close-up of straddle-facing operation on tractor final drive gear using Grade 26 at 260 sfm. Tool life was increased 40 per cent

WESSON METAL CORP. is betting \$100,000 that machine tool users will snap up its new Grade 26 carbide.

Indications are the new grade (\$100,000 went into its development) will produce significant increases in tool life over about 80 per cent of the steel machining range. In 95 per cent of all ma-

chining operations on which the carbide has been applied, it has outperformed other steel cutting grades, with gains in tool life up to 30 per cent.

Origin—The new grade grew out of a search for better carbides to turn the high-alloy steels. No special production lines are needed for its manufacture, but special processes are used, and it takes more time to produce it.

Wesson's metallurgists created Grade 26 primarily to handle the rough and semifinish machining of all types of steel. But now they're finding it effective on some finishing operations. The carbide cuts down the number of grades required for machining operations by as many as four, simplifying problems of tool selection and engineering. Gains are attainable through a wide range of speeds—optimum performance extends from 100 to 400 sfm.

Reason Why—Much of Grade 26's performance is due to its superior cutting-edge strength, says James A. Fraser, the company's president. Inherently high red hardness, combined with a higher thermal conductivity, accounts for the carbide's performance at the elevated temperatures generated at high cutting speeds.

Grade 26 is in full production at Wesson's new metals plant in Lexington, Ky.

"In the face of newer and tougher steel alloys, especially the new higher temperature alloys going into jet aircraft engines and other vital military and commercial vehicles, the need for continually improved carbides to machine these materials is apparent," Mr. Fraser points out. "... while Grade 26 is not the complete answer to alloy machining," he adds, "we feel it is indicative of the direction the carbide industry is taking."

Avondale . . . now 4 divisions

with **STEEL** as their tool



Steel in the hands of Avondale's skilled workmen means an expert job performed in a minimum time. Avondale's 4 major facilities • Main Yard • Harvey "Quick Repair Yard" • Service Foundry • and Avoncraft use steel day in and day out . . . for the Maritime Industry for steel ships and equipment of all kinds . . . steel for the Oil Industry for drill rigs, barges, and service stations . . . steel for the Navy and U. S. Engineers jobs. Yes, steel is the tool with which Avondale builds, repairs and fabricates to serve the growing needs of industry everywhere.

SERVICE • INTEGRITY • EFFICIENCY

SHIP BUILDING • SHIP REPAIRING • FOUNDERS • PROPELLERS • STRUCTURAL STEEL

AVONDALE MARINE WAYS, INC.

CABLE ADDRESS
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P. O. BOX 1030 • PHONE UNIVERSITY 4561 • NEW ORLEANS 8, U. S. A.

Problem...

GETTING FASTER, GREATER RANGE BABBITT COATING FOR MORE EFFICIENT BEARING MANUFACTURING



The Wean Babbitt Coating Line enables McQuay-Norris to get a superior babbitt-steel bond at higher speeds. Greater flexibility, too, is a key feature of this new line.

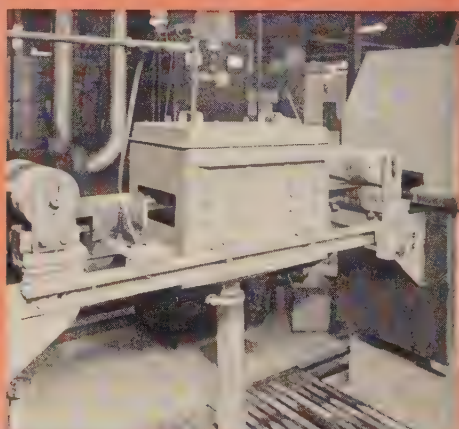
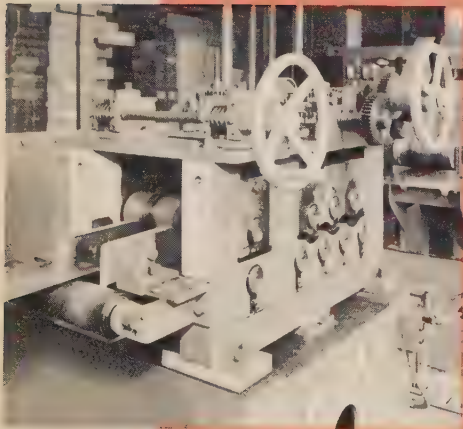
McQuay-Norris, one of the nation's leading manufacturers of bushings and bearings, found it necessary to multiply their production of babbitt coated material. They wanted a babbitt coating line that would cover a wide range of sizes at speeds that would satisfy anticipated production—a precision line that would give them a perfect bond conforming to the high quality standards of the company.

Solution...

COMPLETE LINE DESIGNED AND BUILT BY WEAN EQUIPMENT DELIVERS BETTER QUALITY, WIDEST RANGE AT FASTEST SPEEDS

After thoroughly checking special machine manufacturers McQuay-Norris authorized the Wean Equipment Corporation to design and build a line that would give them the high quality, flexibility and high production speeds they demanded.

Wean Equipment engineers set to work designing the complete line from pay-off to take-up reels. The finished product is a compact, high-speed line that will process material ranging from .036" x 2 1/2" to .125" x 7" at speeds up to 50 F.P.M.



Strip moves from 1. Leveler to ... 2. Alkaline Electrolytic Cleaner to ... 3. Fresh Water Spray Rinse to ...

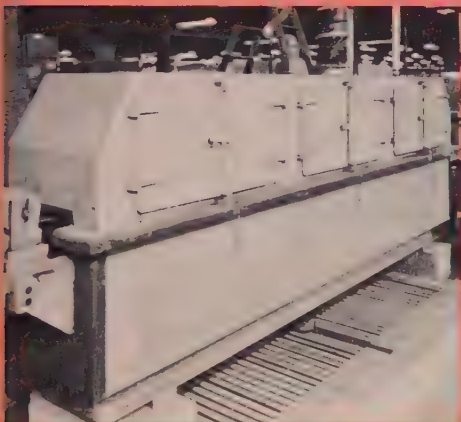
DESIGNING AND BUILDING TOMORROW'S METAL WORKING

Requiring minimum floor space, the Wean line levels, cleans, pickles, tins, continuously casts a babbitt coating, precision machines to desired thickness recovering excess material and neatly coils coated material ready for fabrication.

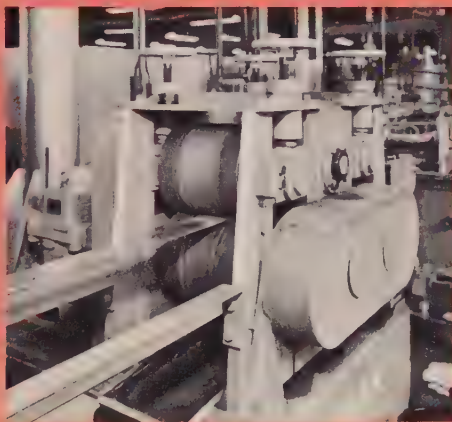
Those who have watched the McQuay Line perform are impressed with its efficiency—the simplicity of operation and ease of maintenance. The line enables McQuay-Norris to produce bearings and bushings of precision quality at unparalleled high speeds. Changeover to differ-

ent gauges, widths and coating thicknesses requires a minimum of time and labor.

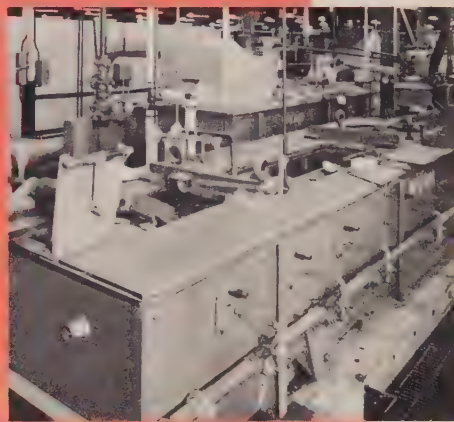
This is another example of Wean Equipment versatility and engineering skill. It is another reason why — when you're looking for the finest in special machinery, continuous lines, slitting, shearing and leveling equipment or wire machinery — you should think first of Wean — designers and builders of tomorrow's machinery today.



4. Electrolytic Pickle to ...



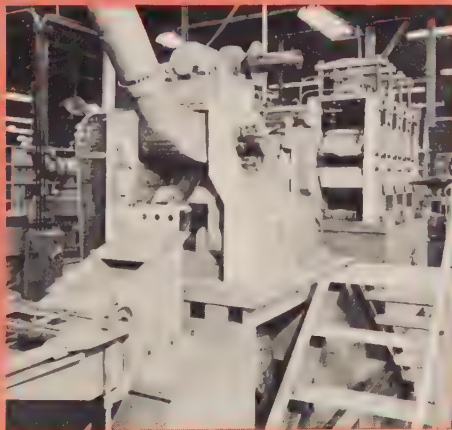
5. Intermediate Pull Rolls to ...



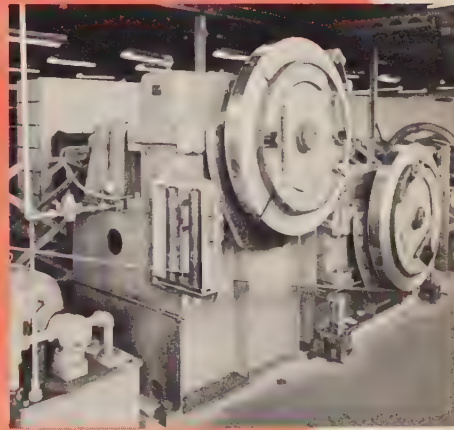
6. Tinning and Pre-heating Furnace to ...



7. Babbitt Casting Head to ...



8. Milling, Skiving and Main Pull Rolls to ...



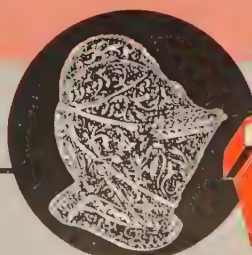
9. Double Head Recoiler.

MACHINERY TODAY IS THE BUSINESS OF THE

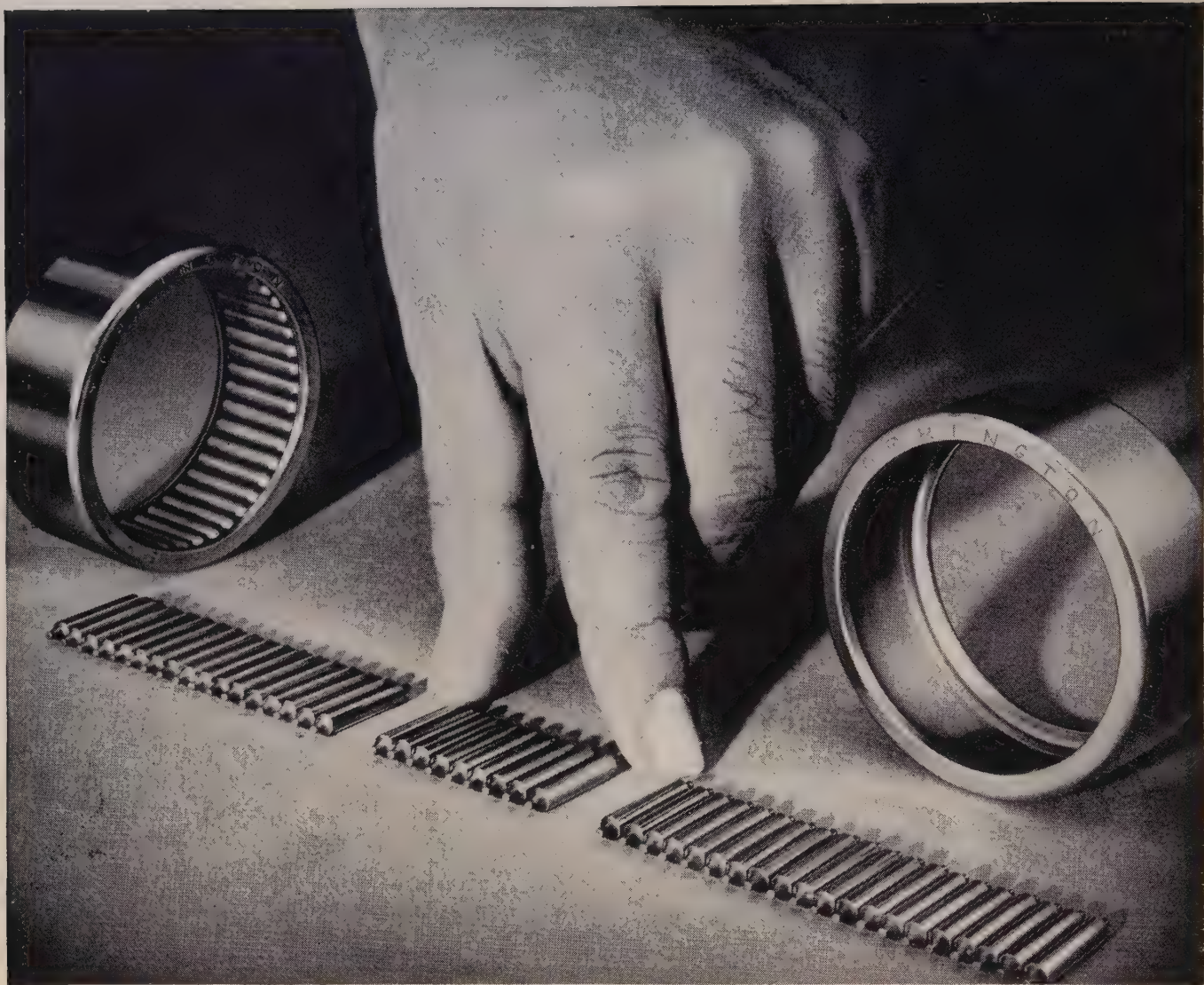
Detroit, Michigan
Chicago, Illinois
Newark, New Jersey

Cable: Weancor

Cleveland, Ohio



EQUIPMENT CORPORATION
Wean



*“Here’s where the **TORRINGTON NEEDLE BEARING** gets its high load capacity”*

The radial load capacity of an anti-friction bearing depends, in the final analysis, on the number of lines or points of contact made by the bearing surfaces in the load zone. This is where the Torrington Needle Bearing really shines.

With its full complement of precision-ground rollers, the Needle Bearing gives many more lines of contact than other types of anti-friction bearings. Thus for a given size, the Needle Bearing has a *greater* radial load capacity than other bearings.

What does this do for your product? The Needle Bearing can give you the

benefits of its high-capacity performance for little more than the cost of a plain bearing; it can help you reduce the size and weight of surrounding members without sacrificing shaft strength, thickness or rigidity.

For twenty years, our Engineering Department has helped designers and manufacturers throughout industry to adapt the unique advantages of the Needle Bearing to their products. Let us help you make the Needle Bearing “standard equipment” in yours.

THE TORRINGTON COMPANY
Torrington, Conn. • South Bend 21, Ind.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON NEEDLE BEARINGS

Needle • Spherical Roller • Tapered Roller • Cylindrical Roller • Ball • Needle Rollers

*These features make the **TORRINGTON NEEDLE BEARING** unique*

- low coefficient of starting and running friction
- full complement of rollers
- unequalled radial load capacity
- low unit cost
- long service life
- compactness and light weight
- runs directly on hardened shafts
- permits use of larger and stiffer shafts

Here Come King-Size Die Forgings

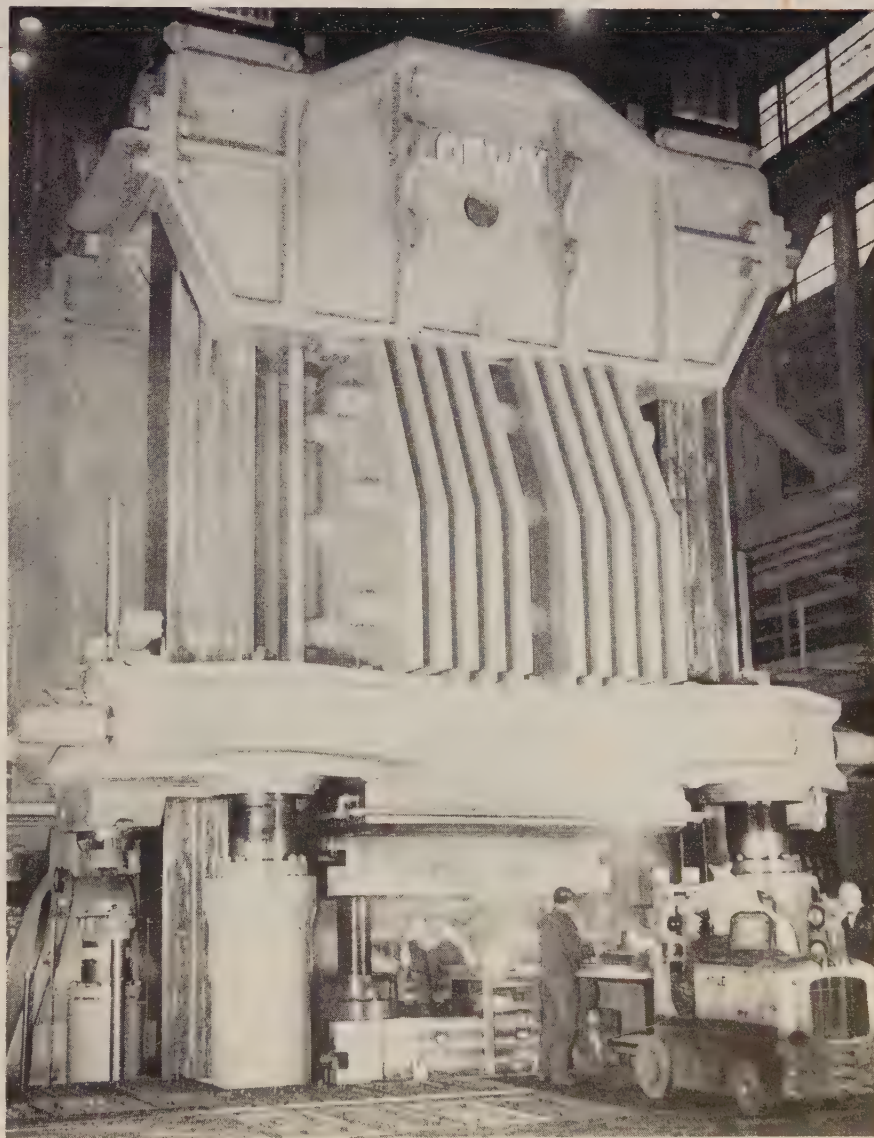


Finished 12-ft aircraft wing spar comes off the dies of Wyman-Gordon's 35,000-ton press. Press has a dead weight of 7180 tons and extends 45 ft above the floor, 62 ft below it. Three sets of dies to forge one wing spar weigh 16,800 lb

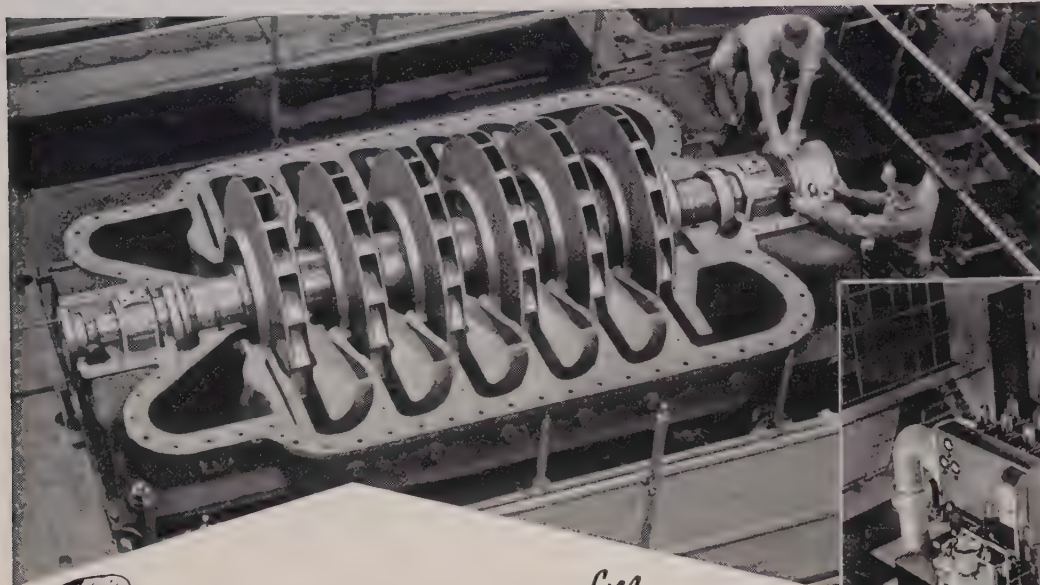
ANY DOUBT about the merits of the Air Force heavy press program should be dispelled by the photograph above. It shows a 12-ft-long aircraft wing spar, forged in three steps on the 35,000-ton Loewy press just placed in operation at the North Grafton, Mass., plant of Wyman-Gordon Co.

Four of these aluminum forgings, 18 in. at their widest point and 3/16-in. at their thinnest, will go into the F102, a delta-wing, supersonic interceptor being built by the Convair division of General Dynamics Corp. They replace 272 parts, 3200 rivets and save 100 lb that would have gone into conventional, fabricated spars. The forged spars require minimum machining.

Fruition—This year will see the completion of a number of these giant presses: Wyman-Gordon will have a second one, a 50,000 tonner, in operation by late summer. Their impact will be felt first in military aircraft. For civilian production, they promise large and intricate die forgings at great savings in man-hours and materials.

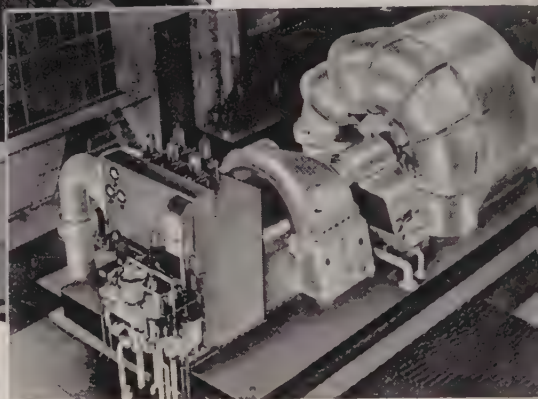


What type **BLOWER**



Typical centrifugal blower with upper half of casing removed.

75,000-cfm, 30-psig blast furnace blower.



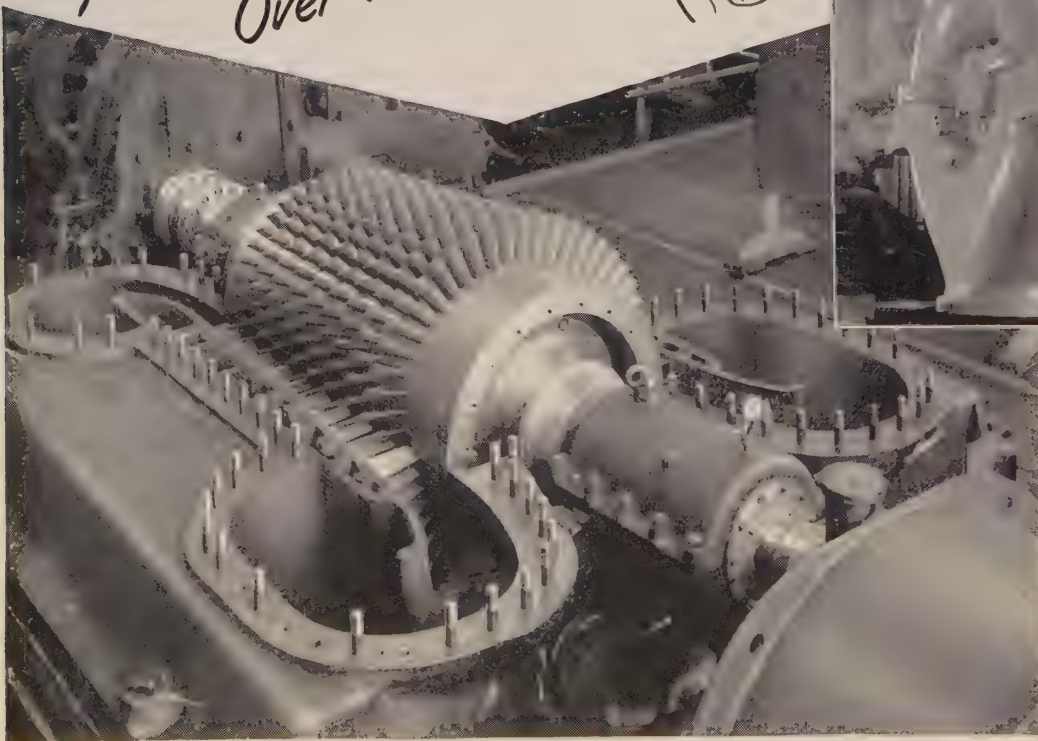
Under 100,000 cfm

Over 100,000 cfm



Typical axial compressor of blast furnace size.

Blast furnace type axial compressor with upper half of casing removed.



ALLIS-

/STEEL

for your steel mill?

As requirements move above 100,000 cfm, axial compressor may replace centrifugal blower because of higher efficiency and lower operating cost. Allis-Chalmers experience with both types assures you of sound recommendations.

Battling rising costs, blast furnace designers have sought increased economy through larger blast furnaces. Air requirements of the new units have risen rapidly and have now reached the point where the centrifugal blower is not always the most efficient and economical unit. These are some of the design and operating factors that influence the choice of the best blower for the job:

EFFICIENCY — The axial compressor is inherently more efficient than the centrifugal blower. This is due largely to the fact that the air passing through the centrifugal blower follows a complicated air path, with sharp turns passing from one stage to the next. In an axial compressor, the air path is more nearly a straight line and losses from sharp turns in the air path are avoided.

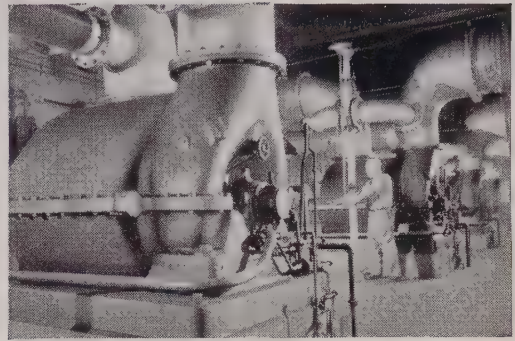
DRIVE UNIT — At 100,000 cfm and above, the speed of a centrifugal blower has dropped below 3600 rpm, while the speed of a comparable axial compressor is approaching 3600 rpm. This difference becomes more pronounced as units get larger. Since the optimum speed of either a turbine or motor drive is about 3600 rpm, the centrifugal makes best use of the drive in smaller sizes, while the axial makes best use of the drive in larger sizes.

SIZE — In all sizes the axial compressor is smaller than a centrifugal blower of the same rating. This means less floor space, smaller foundations, reduced costs.

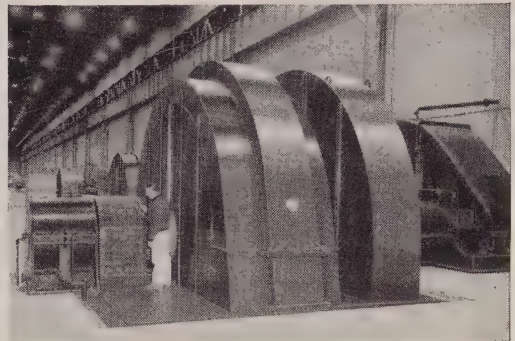
Unbiased Analysis and Recommendations

Since Allis-Chalmers has had wide experience in building both centrifugal and axial types, your Allis-Chalmers representative can help you with your blower problems. Call your nearby Allis-Chalmers District Office or write Allis-Chalmers, Milwaukee 1, Wisconsin.

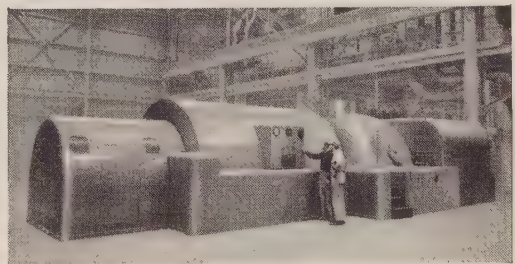
Other Allis-Chalmers Steel Mill Equipment



Coke Oven Blowers . . . both axial and centrifugal types for booster or exhauster service. Photo shows four 23,000-cfm, 5100-rpm, 35-psig exhausting blowers in western steel mill.



Motors . . . all types of ac and dc steel mill motors. The 3500-hp wound-rotor motor shown is used in conjunction with four 6000-hp synchronous motors driving roughing stands of 80-inch hot-strip mill.

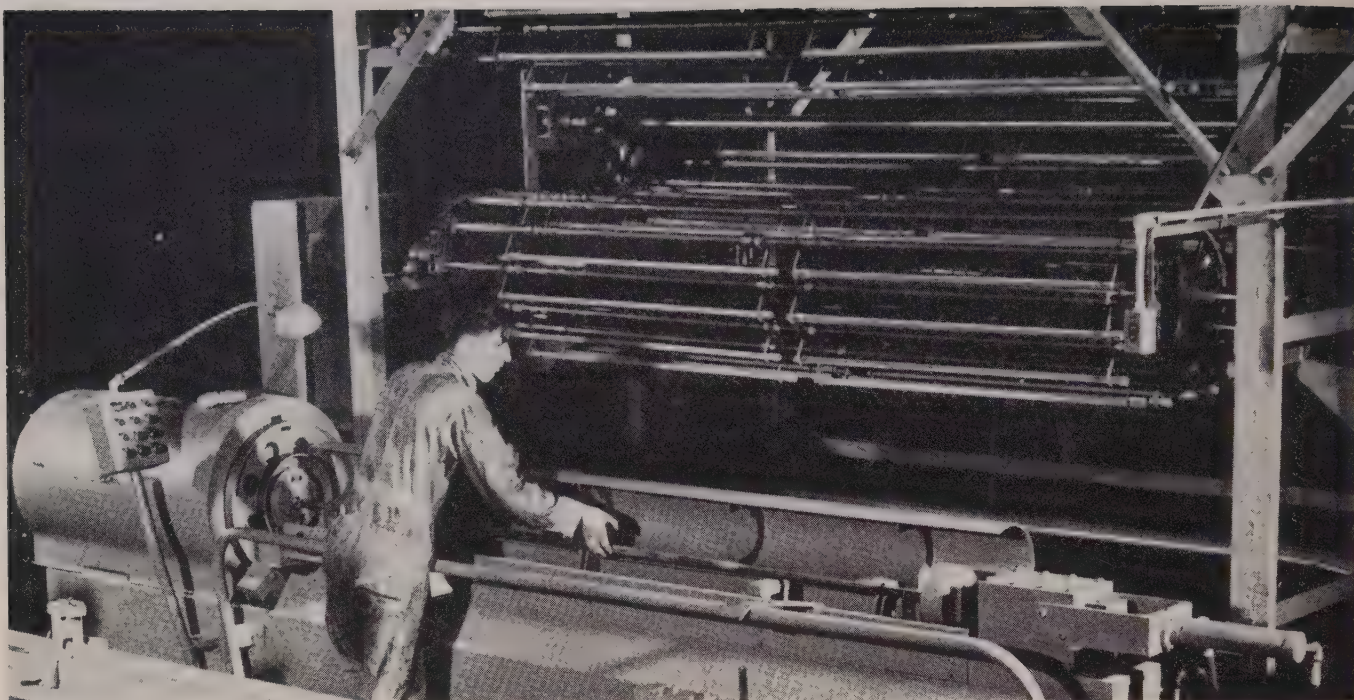


Electric Power Equipment . . . steam turbine-generator units, transformers, switchgear, circuit breakers, rectifiers, control. Shown is a 33,000-kw steam turbine-generator unit with hydrogen-cooled generator supplying power in a modern eastern steel mill.

CHALMERS



A-4611



Torsion bars are preset one at a time. After being twisted they are loaded on the bar conveyor, in back, which leads to the paint dip and drying oven

How Torsion Bars Are Made



The quenching machine accommodates two long bars or four short ones

TORSION BARS aren't new—one patent covering a wagon suspension dates back to 1868. But World War II, plus postwar auto competition, has focused new interest on them.

For the military, the significant factor is weight: Torsion bars for tanks weigh considerably less than conventional suspension systems. One automaker uses another benefit, superior riding qualities, to tempt car buyers.

Torsion bars are simply steel rods which absorb road bumps by twisting and then returning to their original position. They translate the up-and-down motion of the wheel into a turning or twist-

ing motion by a lever arm.

Producer—Betting on a rising demand for torsion bar suspension is Maremont Automotive Products Inc., Chicago, which is taking its know-how gained from military production during World War II and streamlining it for low-cost, mass production—eventually operating mostly under automation.

Basic metal for Maremont's passenger-car torsion bar is SAE 5160, chrome - manganese steel, which is precision rolled to close tolerances to eliminate subsequent machining.

Major production operations of the torsion bar are:

1. Ends are heated and upset

to hex form.

2. Bars move through a hardening furnace and into a Gogan oil-quenching machine. They are held securely to prevent distortion.

3. Bars are transferred to a draw furnace.

4. Shot peening and finishing with a corrosion-resistant Zincilate formulation follows.

5. Final, and most critical operation, is presetting. Passenger car suspensions require four torsion bars—two long, about 9 ft, and two short ones. Long bars are preset, left and right, by twisting in a machine to an angle over 200 degrees, with a tolerance of plus or minus 1 degree. The shorter compensator bars are not preset because they must work in both directions.

Future Uses—While Maremont officials feel that the biggest future demand for torsion bars will be for passenger car suspension, they state there are many other possible uses for torsion bars.

Two examples: One European car manufacturer is using torsion bars in place of conventional valve springs. They also are being tested in connection with gun loading mechanisms.



the dirt flies faster—now with **MUSCLES OF STEEL**

Straining laborers plying pick and shovel are a bygone memory because of today's excavating and road-building equipment. Modern power shovels and draglines use *muscles of steel*—rugged wire rope—to keep the dirt flying fast.

Helping to clear the way for needed highways is another of the important ways in which Wickwire Rope contributes *muscle* to America's might.

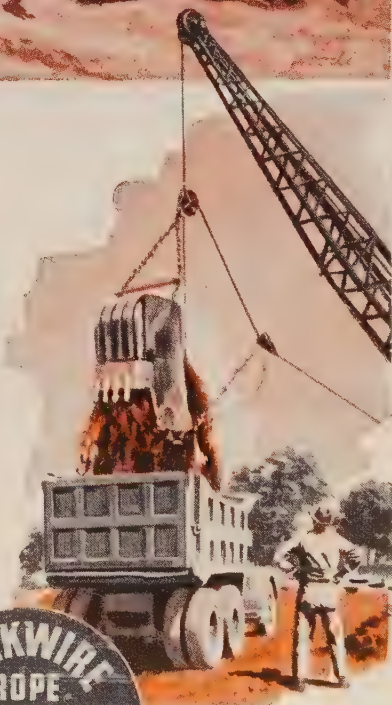
You'll find Wickwire Rope, too, in the mines and the quarries... in the oil fields and logging camps... with the fishing fleets... and in numerous materials handling operations. Whatever the job may be, the extra care and quality fabrication that goes into Wickwire Rope proves itself in longer life, more economical service and utmost reliability.

every industry benefits from wire rope

WICKWIRE ROPE

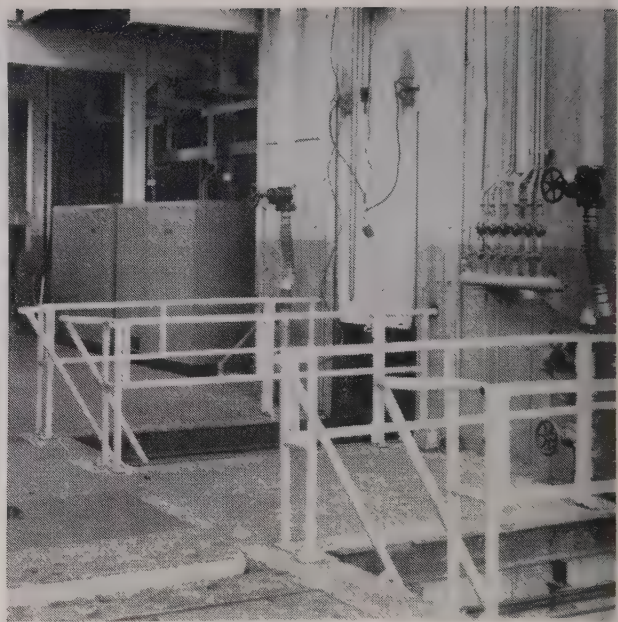
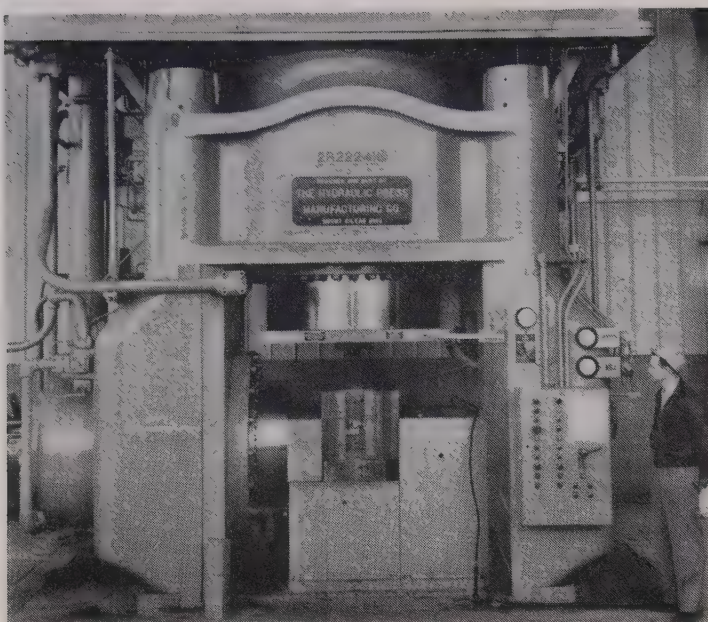


PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
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WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

2533



Sponge is pressed into electrodes . . . New furnaces for double-vacuum melting of 2000-lb

Titanium Gets Ready

"WE'VE already spent \$6 million . . . this expansion reflects confidence on our part as a melter . . . we believe titanium has a big future . . ."

Those words were spoken by James A. Roemer, president, Mallory-Sharon Titanium Corp., at the recent dedication of new facilities at his Niles, O., plant.

Mallory-Sharon's new plant houses four double-melting furnaces that triple former production. They are used for both first and second stage melting of titanium from sponge to ingot. Capacity is now 3 million lb of ingots a year.

First Step — A 3000-ton press compresses sponge and scrap which has been blended and tested for uniformity into good-sized bricks. They are welded together to make an electrode which is several feet long.

The electrode is fed into a vacuum furnace, where it is arc melted, forming a solid ingot.

This first-stage ingot is used as an electrode in a second melting operation which produces a final ingot weighing about 1 ton.

Melting Loss—The yield from sponge to ingot is considered good for titanium. Scrap loss in melt-

ing is about 40 per cent on bar stock, about 50 per cent on sheet.

Ingots are converted into sheet, strip, plate, bars, rounds and other shapes on conventional steel mill equipment.

Check and Recheck — "On the production side, there are three big factors that we have constantly in front of us in regard to quality," says Burt H. McKibben, Mallory-Sharon's chief metallurgist.

Number one: The testing and inspecting necessary to maintain the present quality level. Example: Each lot of titanium sponge is checked for quality and conformance with purchase specification.

To do this, each 2000-lb lot is sampled and a 10-to-15-lb melt is made. This ingot is scalped, rolled to sheet, annealed and cleaned. Complete chemical and physical properties are then determined.

More Tests — As a result of these tests, a 6000-to-8000-lb blend is made and two more 10-to-15-lb samples are melted and tested. If they meet the customer's specification, the blend is released.

After pressing, an electrode is picked at random, and, again, a melt is made and tested. If results are satisfactory, the electrodes are released for melting.

"To do this one job of evaluation and quality control, we use 60 lb of titanium and 50 to 75 technical man-hours," says Mr. McKibben.

Number-Two Factor — This is the effort that goes into improving quality. Work is being done to reduce hydrogen content and to gain control of factors that put hydrogen into titanium.

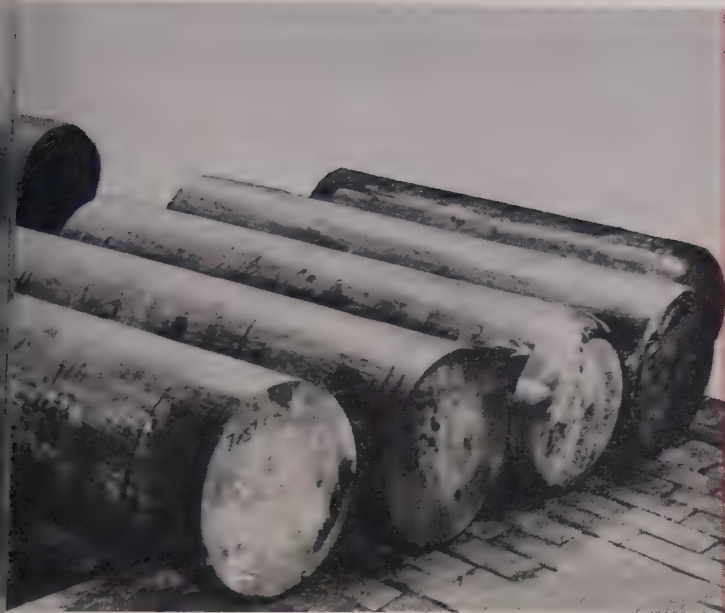
A third factor revolves around techniques for scrap reclamation—sampling and melting methods to use secondary metal.

To make the popular, 70,000-psi, minimum-yield material, either oxygen or metallic elements must be added to pure sponge.

There are four producers of this grade. Each arrives at the desired strength level by use of either oxygen or metallics.

This means four different types of scrap and procedures must be developed for segregation.

Looking Up—But a lot of progress has been made. "Today we can produce titanium with consistent properties from heat to heat . . . with controlled oxygen and nitrogen content . . . and with low hydrogen," Frank H. Vandenburg, vice president and general manager of Mallory-Sharon, reported.



ingots set to go as . . .

TITANIUM—The Future Will Bring . . .

- ★ Sheet alloys that can be formed in soft condition and aged to strengths of 200,000 psi with a savings in weight over stainless of about 30 per cent.
- ★ Forging alloys that will compete with high strength steel at 280,000 psi ultimate with a savings of 40 per cent in weight.
- ★ High temperature alloys that have satisfactory creep properties at 800°F and possibly 1000°F. Indications are that oxidation resistance rather than creep strength will become the limiting factor in the use of titanium at elevated temperatures.

L. S. Buseh
Director of Research
Mallory Sharon Titanium Corp.

for the Future

"Titanium alloys can be made that are weldable and heat treatable. They are completely homogeneous in respect to alloy content," he added.

Applications — Usewise, where does titanium stand today? Mr. Vandenburg answers:

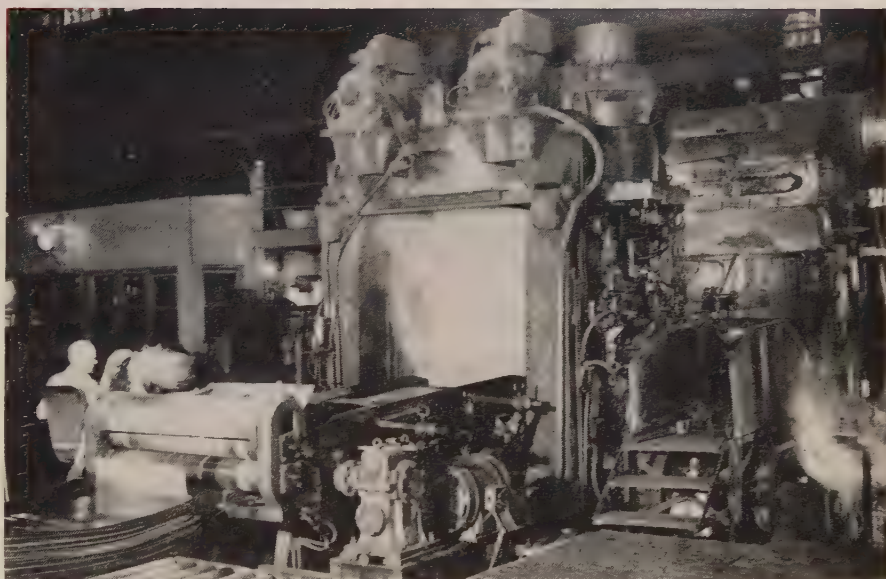
On fighter aircraft, it's found mainly in the aft fuselage section around the hot engine zone. In bombers, it's used for jet engine nacelles.

Pure titanium is used mainly in air frames for nonstructural parts. Advantages: The corrosion and heat protection in shrouds, fire seals, ducts, fairings, ammunition boxes, gun blast tube housings, cowlings and as a replacement for stainless steel in stiffeners and webs in the hot engine zone.

The higher strength titanium alloys are used in air frames for structural parts such as frames, bulkheads, longerons, stressed skins and many other highly stressed members.

Jet engines take titanium for compressor discs, blades, spacer rings and other forged and machined parts.

Nonaircraft — Other equipment, such as tank parts, field gun outriggers, armor plate. Portable



This three-high mill rolls titanium from ½-in. sheet bar to ⅛-in. sheet

equipment can take advantage of titanium's lightness.

Since titanium has unexcelled salt water corrosion resistance, the Navy has applications in submarines and mine sweepers.

Nonmilitary—There's an unlimited civilian market waiting for the price to be lowered. Applications in ship building, in the chemical industry (acid tanks, condenser and heat exchanger tubes and steam turbine blades) and in the

food processing industry someday will take considerable tonnages.

But what the titanium melters really need at the moment is orders. "The time is now," says Mallory-Sharon's president. Volume production is the key to getting quality up and costs down.

There are firm indications that help for the industry may be on the way from Washington. For the latest report on this development, see page 37.

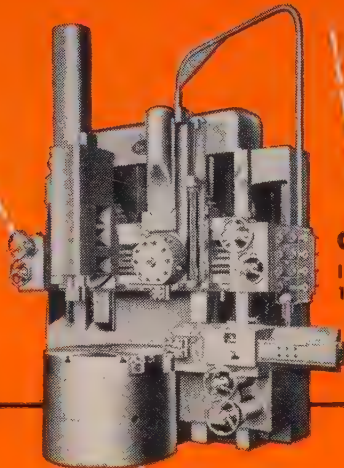
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10" with 6, 8, 12 or 16 spindles, 14" and 18" with 6 or 8 spindles.



Just call your nearest Bullard Sales Office or Distributor or write The Bullard Company, Bridgeport 2, Connecticut. Telephone EDison 6-2511.

CUT MASTER V.T.L. Model 75

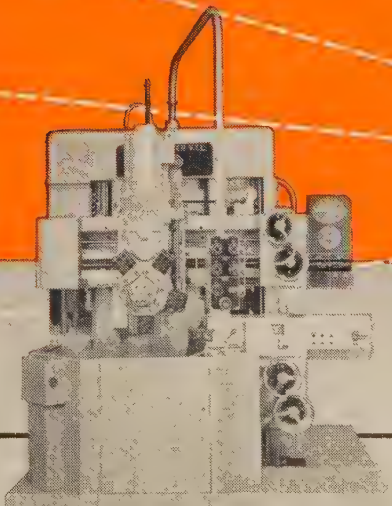
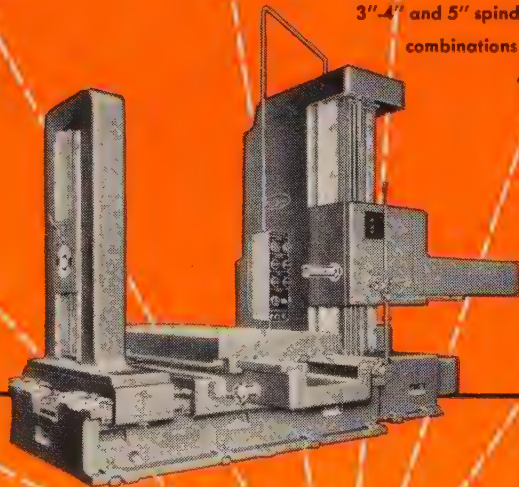
In six sizes, 26" to 76" table diameters in 10" increments. Various combinations of heads are available.

HORIZONTAL BORING, MILLING AND DRILLING MACHINE Model 75

3"-4" and 5" spindle — Available in many combinations of bed lengths, vertical capacity and table size.

MAN-AU-TROL Model 75

For fully automatic operation — may be applied to any or all heads of Cut Master V.T.L. Model 75 at time of ordering or in your plant at a later date.

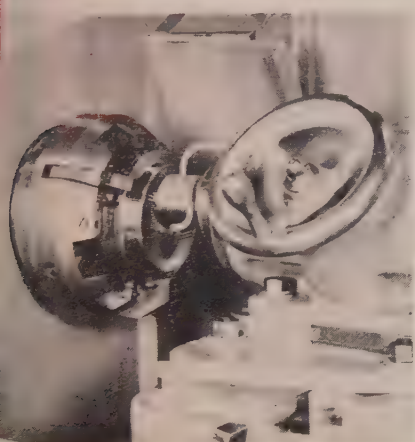


THE BULLARD COMPANY
BRIDGEPORT 2, CONNECTICUT

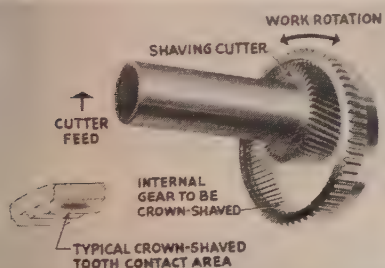
Shaves Worktime in Half

CROWN-SHAVED tooth surfaces on internal spur and helical gears can be produced by a new plunge-cut, rotary-shaving process about twice as fast as conventional methods using cutter or work reciprocation.

Developed by National Broach & Machine Co., Detroit, the process produces a tooth shape like that of the Elliptoid form originated by the company several years ago. Usually, teeth are slightly thinner at the ends than at the center. The maximum thickness zone can be positioned



Internal, rotary-gear-shaving machine set up for plunge-cut process



either side of center, if desired. The amount of crown can be varied.

Advantage—This crowning feature, which in tooth thickness variation amounts to only a few tenths of a thousandth of an inch per inch of tooth face width, avoids tooth end bearing caused by minute errors or gear deflections under load.

The process is particularly adaptable to internal gears in automatic transmissions and other types of geared drives operating

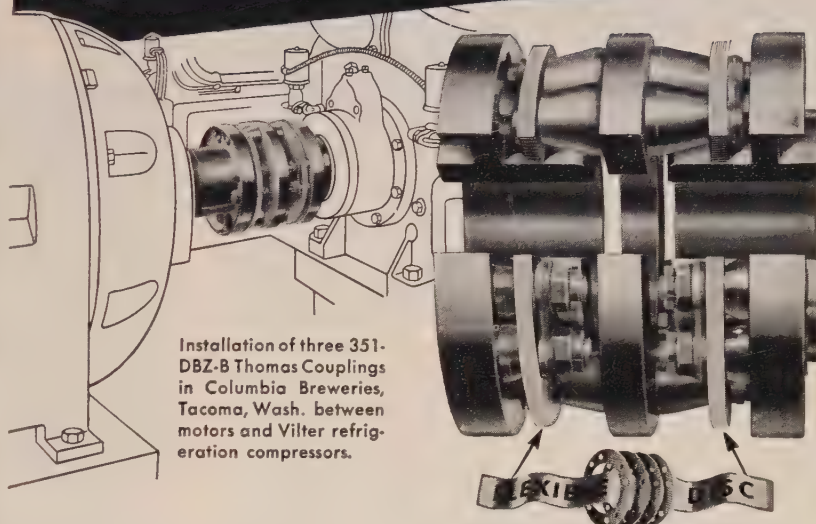
under relatively high loads at high speeds where minute tooth errors or deflections present noise and wear problems.

Shaving Procedure—To crown shave an internal gear, it is mounted on the workhead of a conventional internal gear shaving machine. The cutter is meshed with the gear and hand fed

against a stop to position the cutter in correct axial location with the gear.

The shaving machine workhead is rotated with the cutter in mesh with the work. The cutter is fed up to depth in predetermined increments with no cutter reciprocation. Known as plunge-cut in-feed, this process permits the cutter to form a crowned tooth surface while simultaneously finishing the gear tooth surfaces to provide uniformity and accuracy.

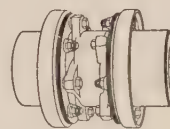
THOMAS FLEXIBLE COUPLINGS... for more years of better service!



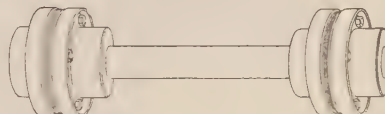
Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES	
FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower and shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.



Write for our new Engineering Catalog No. 51A

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U. S. A.



Looking for better parts at lower costs?

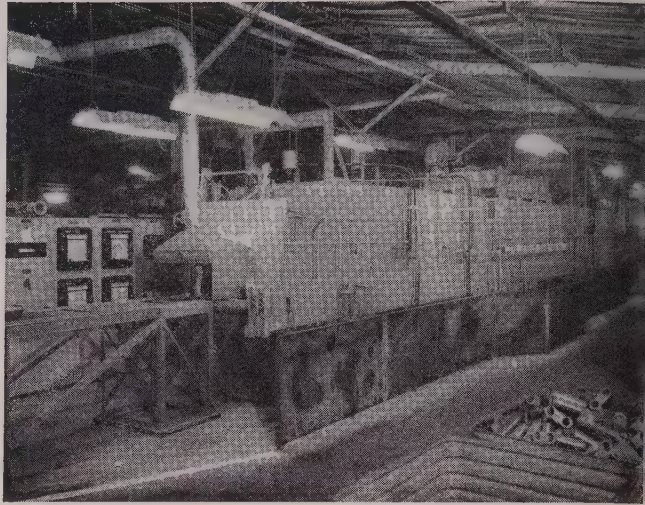
B-N BRAZED ASSEMBLIES MAY BE YOUR ANSWER

Over the past few years an increasing list of customers have found that redesigning their parts for production as brazed assemblies has made possible a new high in quality and performance, at reduced costs.

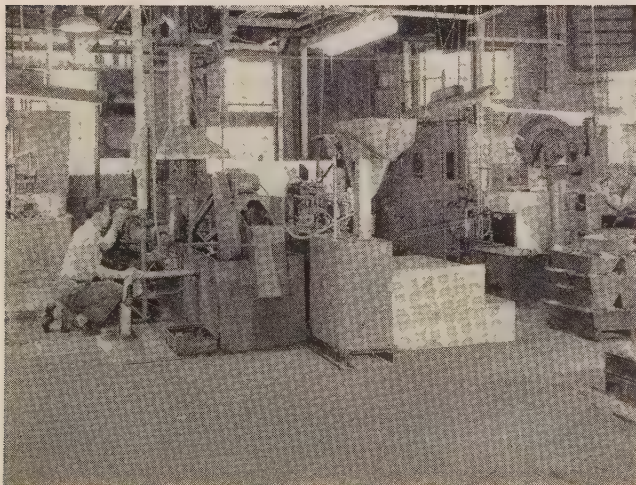
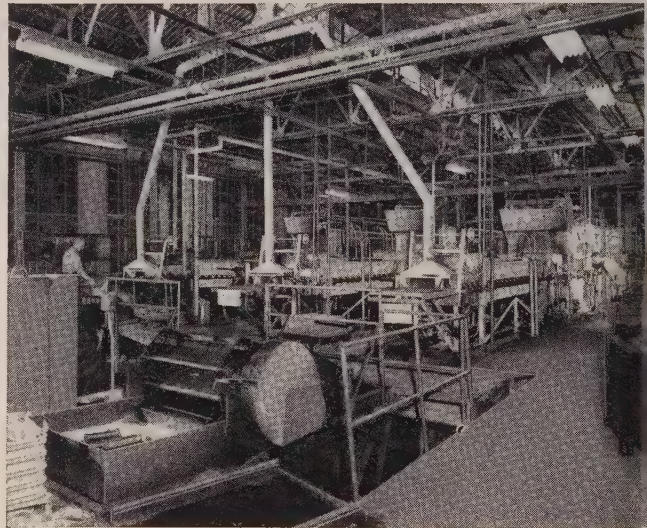
Quality is improved for many reasons...greater control of production and materials, closer tolerances, specialized steels in each part of the unit for specific requirements, more accurate heat treating results, greater uniformity throughout.

Costs are reduced, too, for varying reasons...sometimes because of the increased production possible by combining stampings and machined parts through brazing...or because material is saved because of the efficiency of brazed production...perhaps the savings are because the utilization of B-N facilities obviated installation of costly equipment, or because Burgess-Norton, one of the pioneers in production hydrogen-copper brazing, has gained valuable experience and knowledge that saves the customer through the total of many small efficiencies.

Brazed assemblies are not the answer to every parts problem, certainly, but they are being employed with advantage in more and more instances. If component parts are required in your production picture, we sincerely believe it will pay you to check with Burgess-Norton. Your inquiry will be handled promptly. If you prefer, a sales representative will call at your convenience.



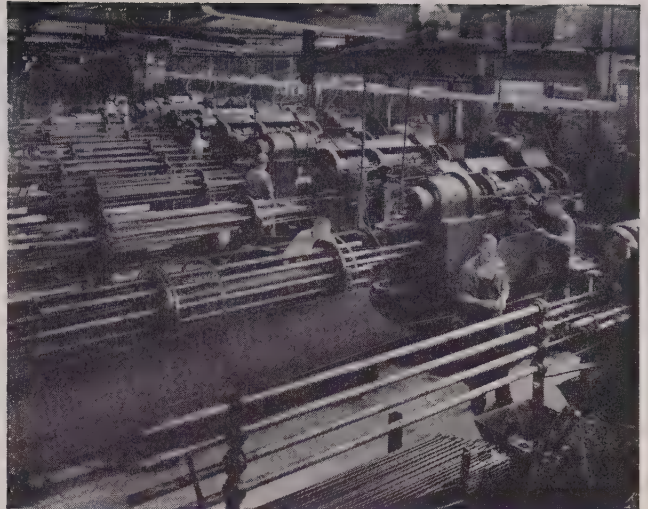
Burgess-Norton, one of the pioneers in production hydrogen-copper brazing, today serves industry with over \$1,000,000 worth of diversified brazing equipment...utilized for an ever-widening range of components.



The exceptional B-N heat treating facilities include both batch type and continuous fed atmosphere controlled furnaces, as well as induction heating. Burgess-Norton was one of the earliest firms to employ large scale induction heating for the treatment of metal.



Production of many of the brazed assemblies begins in the stamping department. By combining stampings and machined parts through hydrogen-copper brazing, B-N effects considerable savings in production and at the same time improves performance of the part.



This partial view of the Burgess-Norton screw machine department shows only a few of the basic machines employed in parts production. Facilities include machine tools for all secondary operations, plus a complete tool room.



These assemblies are representative of the many different parts problems that are being solved for industry by B-N engineering, production facilities and experience.



Firm in the knowledge that good parts begin long before actual production, Burgess-Norton maintains a large staff of engineers and an unusually complete metallurgical laboratory. These engineers, experienced in parts redesign for modern production methods, have been a major factor in the B-N "better parts at lower costs" story.



For a more complete picture of Burgess-Norton

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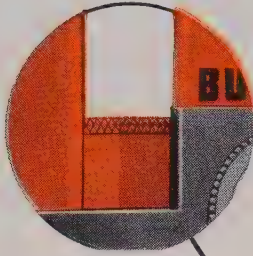
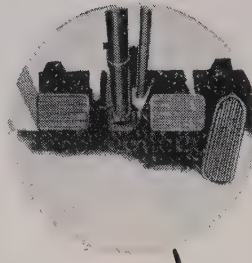
BURGESS-NORTON MFG. Co.

ESTABLISHED 1903

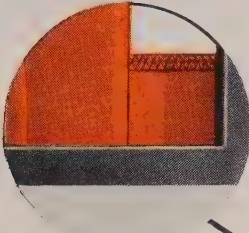
GENEVA, ILLINOIS

SERVING INDUSTRY FOR OVER FIFTY YEARS

FAMILIAR CONTROLS
eliminate confusing one
for another, increase safety.

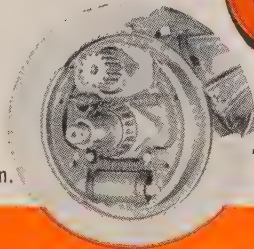


CLEAR FLOORBOARD SPACE
prevents tripping, aids
fast exit when needed.



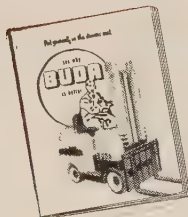
WIDE LOW STEP
enables operator to get
off quickly from either side.

POSITIVE BRAKES
self energizing in both
forward or reverse direction.



BUDA

**FORK LIFT TRUCK IS
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Allis-Chalmers Manufacturing Company
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NEW

PRODUCTS and equipment

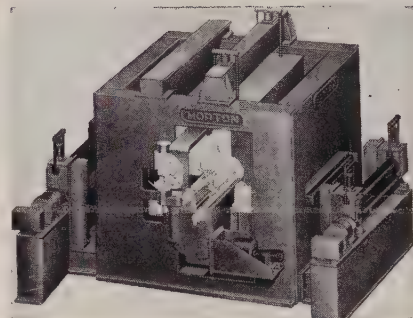
Write directly to the company for more information

Combination Shear, Welder, Trimmer

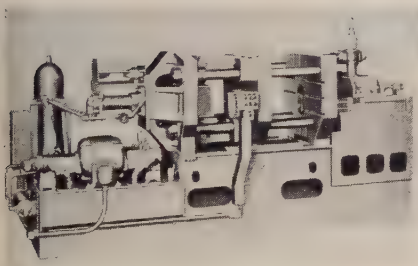
Model RB has been designed to join the ends of coils in continuous galvanizing, pickling, annealing and slitting lines. Basic machine components are: Entry and exit pinch rolls, entry and exit strip-centering devices, transfer carriage with independent clamp jaws, double blade upcut shear and die set, welder-trimmer unit, roller lift and hold-down devices. All are contained in a single unit,

giving complete automation to the joining process.

This is one of ten models designed for shearing, welding, trimming or rolling. The equipment has been developed to meet the requirements of the ferrous and nonferrous metal industries. Morton Mfg. Co., Broadway and Hoyt, Muskegon Heights, Mich. Muskegon Heights 3-2148



Diecasting Machine, Plunger Gooseneck Type



Over-all weight of the machine is 24,000 lb. The 6-in.-thick, solid-steel die plates, 4-in.-diameter tie bars and channel steel base (extending the length of the machine) provide stability, rigidity and strength for proper application of die clamping pressure capacity, which is rated at 400 tons. Die space between tie bars is $32\frac{1}{2} \times 17\frac{3}{4}$ -in. Die plates measure $44\frac{1}{2} \times 35\frac{1}{4}$ -in. The die separation stroke is 12 in. The hydraulic system provides a fast operating

cycle through use of two, single-stage pumps mounted to a 15-hp, double-end motor. This system is capable of putting the machine through a full 10 cycles per minute.

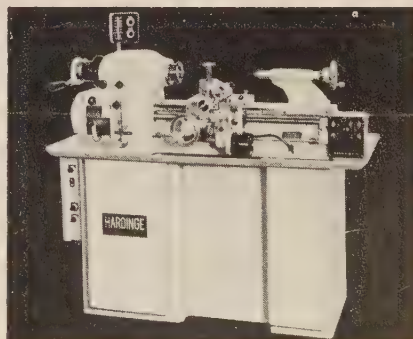
Model BH-30 is fully automatic. The diecasting cycle is controlled by electric timers. Capable of injecting up to 25 lb of zinc, this machine applies injection pressures up to 2000 psi, with injection speeds up to 400 fpm. Kux Machine Co., 6725 N. Ridge, Chicago 26, Ill. Ambassador 2-3070

Lathe Has Independent Variable Spindle Speed and Feed Control

Infinite pushbutton spindle speed control and an independent electric carriage and cross slide are features of the Model HLV. Spindle speeds from 125 to 3000 rpm are selected at a control box located over the headstock. The rate of carriage and cross slide feed is controlled independently. The exact spindle speed is indicated on the control box.

A lever-operated collet closer provides for fast, easy regulation.

It also provides for instantly adjustable collet tension throughout the full range, from light to heavy holding power. A built-in spindle handwheel is a convenient means for rotating the spindle by hand when indicating or inspecting precision work. The fully enclosed head stock features an extra large $1\frac{1}{16}$ -in. collet capacity, with a Hardinge 5C collet. Hardinge Brothers Inc., 1420 College Ave., Elmira, N. Y. Elmira 6256



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by

HALLDEN

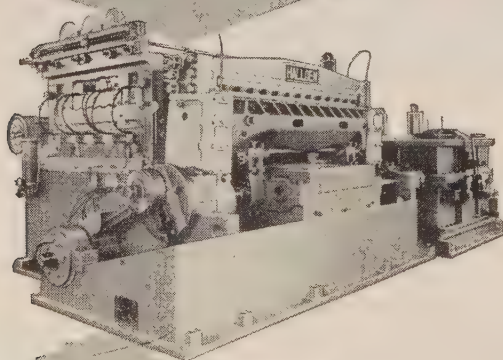
**S
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flexible design

cutting accuracy

continuous feed

rugged construction



"the shearing specialists"

**THE HALLDEN MACHINE CO.
THOMASTON, CONN.**

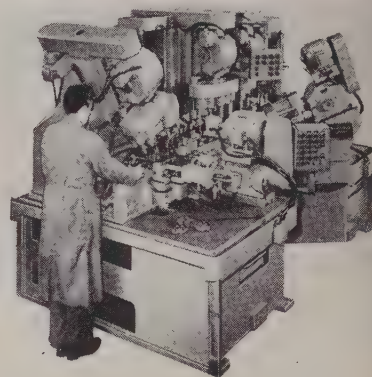
Sales Representatives

The Wean Engineering Co., Inc., Warren, Ohio (Ferrous)
T. E. Dodds, Pittsburgh, Pa. (Non-Ferrous)
W. H. A. Robertson & Co., Ltd., Bedford, England
(Ferrous & Non-Ferrous)

NEW PRODUCTS
and equipment

Drilling and Tapping Machine

This machine turns out 450 carburetor bodies an hour. It is an eight - station, multiple - spindle, dual - loading, transfer - type machine, with five drill units, two tapping units and an air-hydraulic transfer mechanism. Various drill-

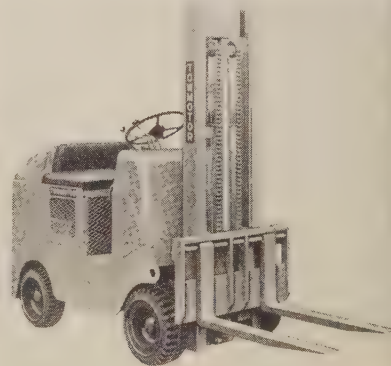


ing and tapping operations are performed, the parts being located and clamped at each station in previously machined valve holes.

Parts ride free on rails between stations. Hartford Special Machinery Co., 287 Homestead Ave., Hartford 12, Conn. Jackson 5-1401

Lift Truck Combines Capacity, Maneuverability

Claimed to have the compactness and maneuverability found only in fork lift trucks with considerably less capacity, model 500 handles loads up to 2½-tons.



It is available in both gasoline and Diesel powered models. Designed with a turning radius of 81 in., it will operate smoothly in aisles 69 in. wide. Towmotor Corp., 1226 E. 152nd St., Cleveland 10, O. Glenville 1-0900

Automatic film developing sink with top section of Stainless Steel.



Forming edges of top on 100-ton press brake.

Welding z-sections to underside of cooling tray.



How Stainless Steel helps make film developing automatic

DURABILITY, corrosion resistance and good looks are built into this automatic photographic developing sink through the use of Stainless Steel for the entire top section, including the two trays and the center bowl.

Metlmex Corporation, Lewistown, Pa., fabricator of this sink, makes a variety of products, working with both Stainless Steel and carbon steel. Fabricating equipment is used interchangeably with no special tools for working Stainless. The only difference in shop procedure lies in precautions taken to avoid marring the smooth surface of Stainless Steel.

Stainless Steel offers a unique combination of properties—plus ease

of fabrication. It's the answer to a wide range of design problems. And when you use it, be sure you get service-tested USS Stainless Steel.

FABRICATING FACTS

Sheets are sheared to size in a $\frac{1}{4}$ " capacity squaring shear and edges are then formed on a 100-ton press brake.

Front, sides, bowl and trays are assembled to form a complete integral stainless steel top unit. Metal-

lic-arc, heliarc, and spot methods are employed in welding temperature controlled trays and cabinets. Developer and fixing trays are attached to unit by riveting one side to stainless steel hinge permitting mechanical agitation.

Stainless steel panels are easily lock seamed to form center bowl section.

After assembly, entire unit is ground and polished to remove weld marks.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • NATIONAL TUBE DIVISION, PITTSBURGH
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UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

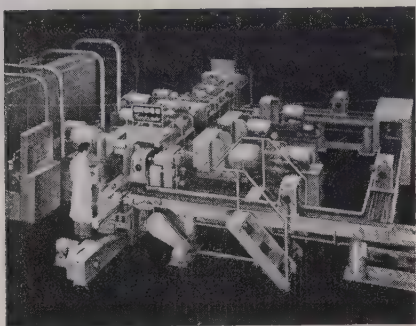


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UNITED STATES STEEL

Machine Completes Rear-Axle, Differential-Gear Housings

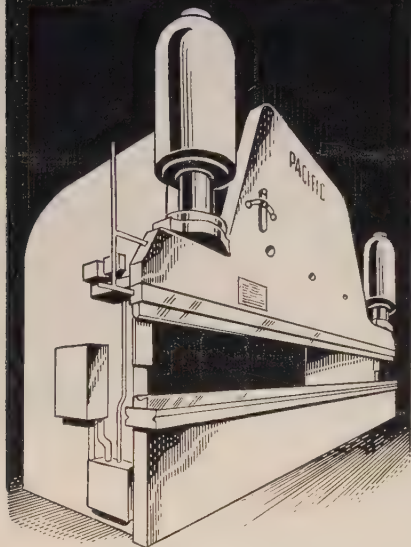


One operator can complete 155 housings an hour. It has nine stations: One for loading, four for boring, one for tapping, two for indexing, one for visual inspection. Operations include rough and semifinishing of pinion bores, rough boring, semifinish boring and tapping the crossbores. Pallet-type, work-holding fixtures are

used. Parts are clamped in the fixtures with hydraulic power wrenches. They move from station to station and return to the loading station automatically.

Standard and special parts of the Transfer-matic are interchangeable. Electric and hydraulic construction are to JIC standards. Cross Co., Detroit 7, Mich. Walnut 1-3000

Versatility



Produces Profits

BENDING	PUNCHING
BRAKING	CORRUGATING
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Anyone can operate it:

Can't be jammed or overloaded by inexperienced personnel.
Job can be set up quickly in any position along the bed.
Full tonnage is available at any point in the stroke.
Minimum wastage is obtained through accurate control.
Peak production is obtained by adjustment of stroke length.

World Wide Acclaim

Famous users in many parts of the world affirm that Pacific Press Brakes have proven satisfactory, profitable, and — above all — VERSATILE.



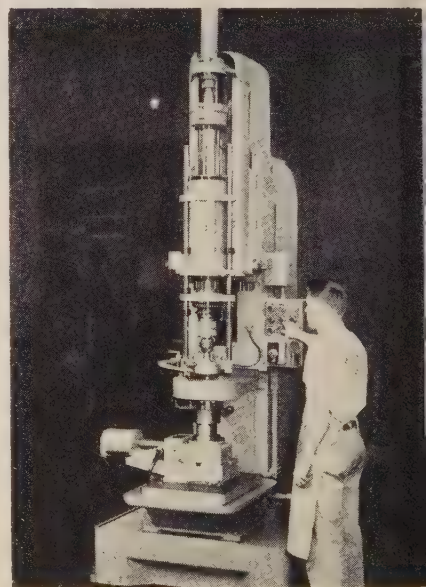
PACIFIC INDUSTRIAL
Manufacturing Company

848 FORTY-NINTH AVENUE OAKLAND, CALIFORNIA

Spline Honing Machine

Model 728 is designed for a broad range of operations, including spline honing. Hardened gears are processed so bearing surfaces of the splines are concentric with the pitch of the teeth and have a finish that will not gall the shaft.

To hone splines, tools are designed with a stone for each spline. The stone is about half



as wide as the spline and is swept across the spline as the tool is reciprocated through the bore. To get full surface coverage by all the stones, the part is indexed periodically during the honing cycle. Micromatic Hone Corp. 8100 Schoolcraft Ave., Detroit Mich. Webster 3-7835

Let the story of steel's most flexible and dynamic production tools!

Written for National Carbon Company's "Carbon and Graphite News" by Charles W. Vokac, Manager, Hydro-Arc Furnace Division of the Whiting Corporation, this article evaluates the electric furnace in light of current management problems. After a brief review of major applications, it covers such topics as:

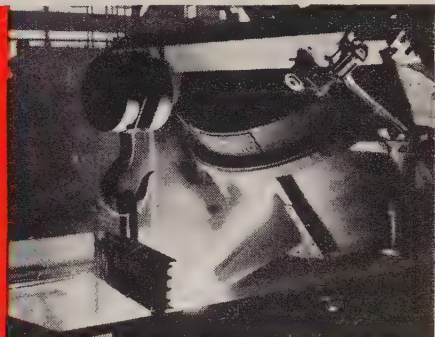
- "On-and-off" Economy
- Heat efficiency versus fuel cost
- Summary of electric furnace features as they affect distribution of fixed charges maintenance and overall plant efficiency
- Relation of temperature control to product quality
- Increased capacity and its relation to production expense
- More production per dollar of investment
- What is ahead?

There is no detailed discussion of any one phase of electric furnace operation. As a result, you get a broad, general picture of the important role the electric furnace plays in modern steel manufacture.

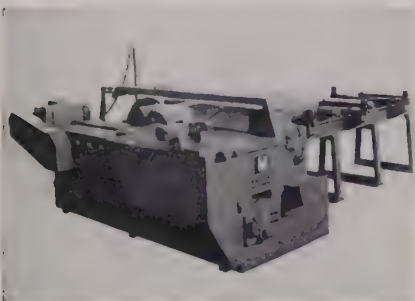
You may obtain copies of this report without charge. Write for Bulletin "X". And for further information about Whiting Electric Furnace features, such as the Automatic Electric Clamp, Top Charge, and Air-Counterbalanced Hydraulic Electrode Positioning Equipment, request Whiting's 40-page bulletin, FY-168. Write today!

WHITING CORPORATION

15643 Lathrop Avenue, Harvey, Illinois



Cold Sawing Machines for Nonferrous Metals



Model WKLM 1000 (illustrated) is designed for high-speed sawing of aluminum, copper and other nonferrous slabs and plates up to 60 x 12 in. cross section. Semi-automatic in operation, it has hydraulic feed up to 60 in., with rapid automatic return and automatic chip removal.

The hydraulic unit, oil reservoir,

electrical coolant pump, electric switch gear and chip compartment are installed in the body casting.

The machine is supplied in five speed ranges from 500 to 660 fpm, with power on the main spindle up to 60 hp. With dual speed motors, the speed range can be doubled.

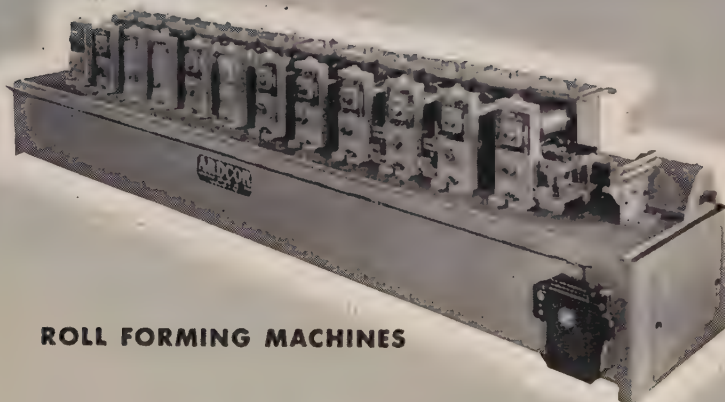
Other models are available for nonferrous bars, ingots and billets up to 21 in. diameter, as well as for steel up to 27 in. diameter.

Built by Gustav Wagner Machine Tool Works and distributed by Klingelhofer Machine Tool Co., Industrial Park, Kenilworth, N. J. Chestnut 5-3131

ARDCOR

Engineered

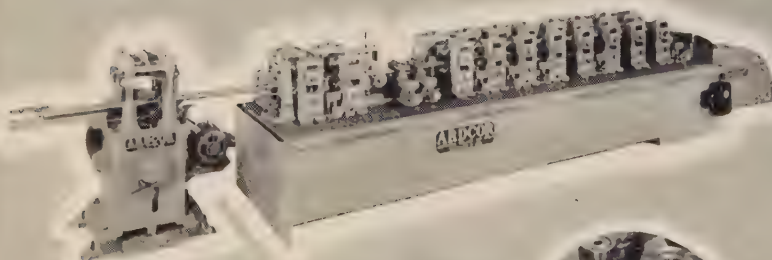
MEANS BETTER COLD-ROLL FORMING



ROLL FORMING MACHINES

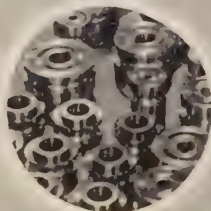
PUNCH TYPE CUT-OFFS

LOCK SEAM TUBE MILLS



ARDCORLOY TUBING ROLLS AND FORMING ROLLS

To Your Specifications or Ardcor Design
— for all makes of machines



Portable-Type Filter

The Clean-Flo Filter clarifies alkaline plating solutions and other alkaline-type liquids, coolants and lubricants without filter aids. The economy filter will handle from 100 to 150 gallons of activated, carbon-treated solution



between tube changes. The standard unit will handle from 500 to 1000 gallons. The Moyno pump, used on these filters, delivers up to 800 gph against zero psi back pressure, from 500 to 600 gph against 50 psi back pressure.

The working principle involves the use of filter tubes of special honeycomb construction, providing depth filtration with minimum clogging. The motor is a 1/2-hp, 115/230-v, single-phase, 60-cycle capacitor unit, with 10-ft, heavy-duty extension cord and plug. Two, 10-ft lengths of 3/4-ID, chemically resistant fluid hose complete the assembly. Lea Mfg. Co., 16 Cherry Ave., Waterbury, Conn. Plaza 3-5116

American **ROLLER DIE CORPORATION**

29520

Clayton

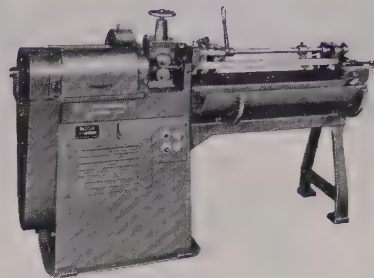
Wickliffe, Ohio

Wire Straightener, Cutter

Two models are offered. The No. 2-C3 is for use with wire 1/16 to 3/16-in., the 2-C4 for wire from 3/32 to 1/4-in. Both feature: Rigid straightener arbor support brackets for minimum vibration; a completely enclosed straightener arbor guard to keep oil off the machine and V-belts; and heavy V-belts with large pulleys. Electric control buttons are flush-

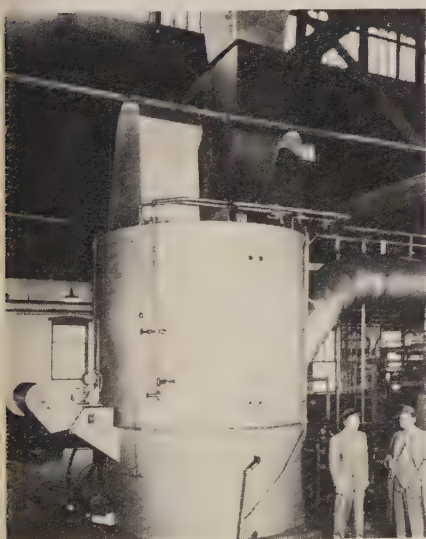
mounted. A high-speed, five-die straightener is arbor mounted on ball bearings.

A solenoid-operated trip mechanism is recommended for small diameter wire sizes. These machines process all commonly used types of material. Lewis Machine Co., Dept. 1C, 3441 E. 76th St., Cleveland 27, O. Michigan 1-3015



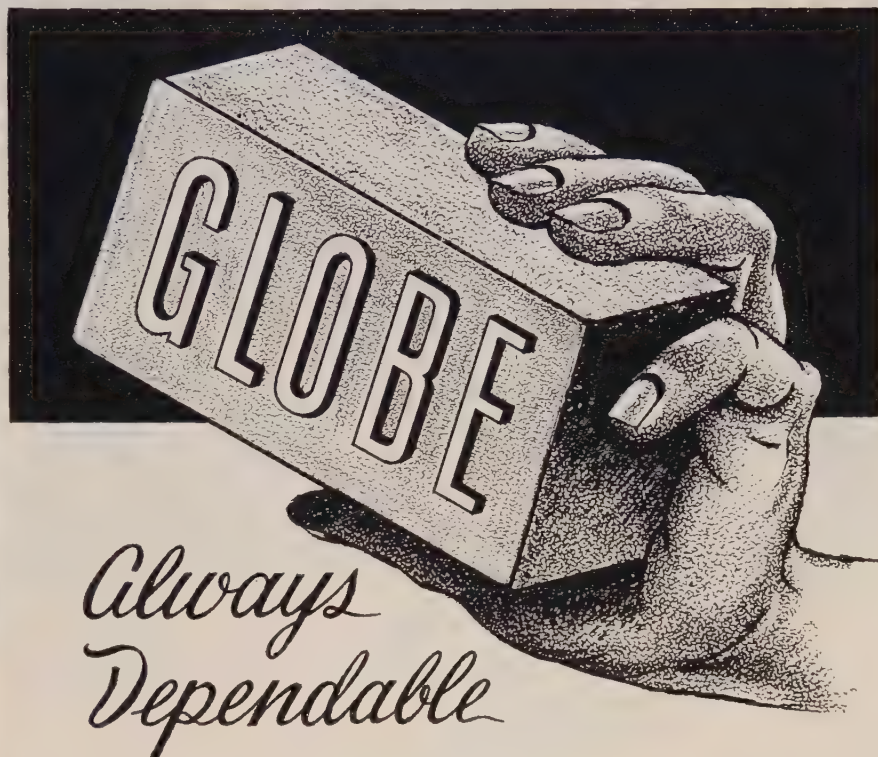
Filter Works on Wet Collection Principle

Air to be cleaned is drawn into the Hydro-Filter and brought into contact with water. Dust is transferred to the liquid stream, settled out of the water and disposed of. The dust must be insoluble in water, capable of being wetted and sufficiently dense to settle. The machine, which is also available for gas cleaning, does not lose efficiency with changes in air flow



and dust concentration.

Efficiency is the result of good contact between the air being cleaned and the water, plus the period during which that contact is maintained. Moving parts are kept to a minimum. Automatic controls make for simple operation. National Dust Collector Corp., 549 W. Washington Blvd., Chicago 6, Ill. State 2-6148



SUPERIOR LADLE BRICK

The greater heat resistance of GLOBE brick is well known in the steel industry. Because these bricks, wire cut or dry pressed, last longer—saving much time lost in refractory replacement—they help increase melting capacity. There is a type for every need, so let us place our experience at your disposal.

**Lowers Per Ton Cost and
Increases Melting Capacity**

SERVING THE STEEL INDUSTRY SINCE 1873

The GLOBE BRICK Co.
EAST LIVERPOOL, OHIO

Now you can make WELDED TUBES *faster, better, at lower cost, from -*

STEEL

STAINLESS

BRASS

COPPER ALLOY

ALUMINUM

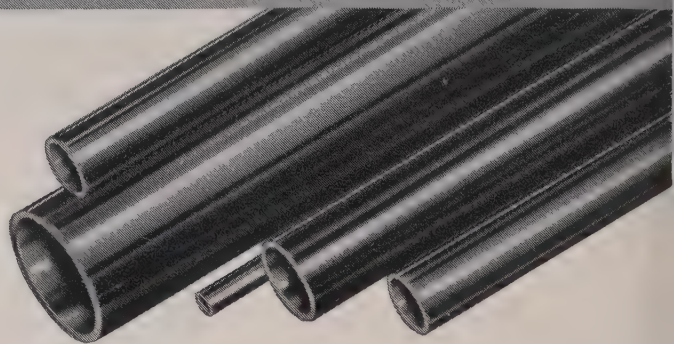
MAGNESIUM

NICKEL

INCONEL

MONEL

NO



Within the last few years rapid strides have been made by Yoder in widening the scope and raising the speed of cold process electric-weld pipe and tube making. In tube mills perfected by Yoder many non-ferrous metals can be induction-welded in gauges up to .154" and at speeds approaching those attained in resistance welding steel tubes.

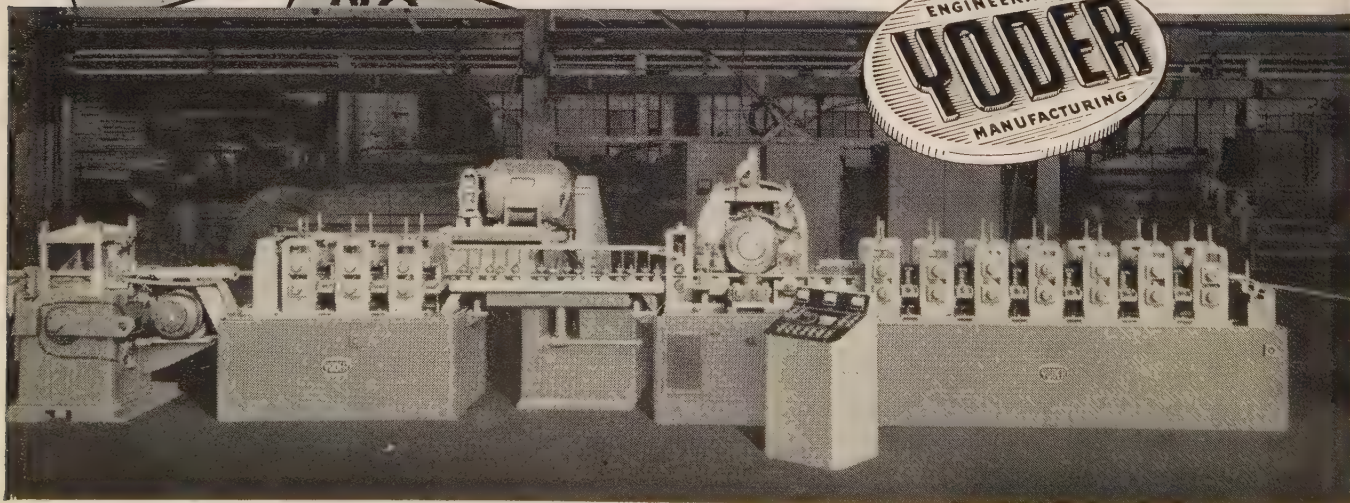
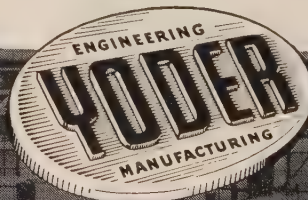
Further, speeds up to 250 fpm are reached in induction-welding steel tubing in the same gauges.

New, compact Yoder "4-in-1" Welding Transformer is the last word in resistance-welding steel pipe and tubing in sizes up to 24" diameter.

More specific information, literature and estimates on request, without obligation on your part.

THE YODER COMPANY

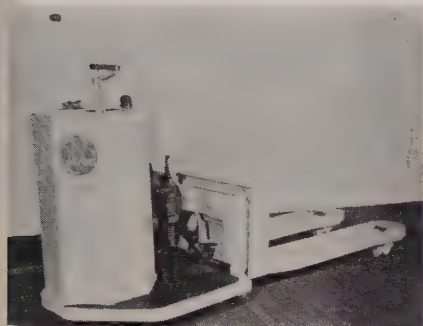
5502 Walworth Ave. • Cleveland 2, Ohio



NEW PRODUCTS and equipment

Double-Faced Pallet-Type Handler

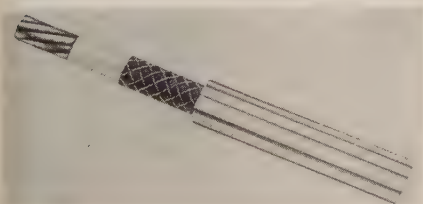
The new fork-truck-type handler is controlled by a single lever. It has two speeds forward and two in reverse. It automatically shifts from low to high and vice versa. By merely raising the control lever, the pallets are lifted. Brakes apply instantly and automatically when the operator lets go of the control handle.



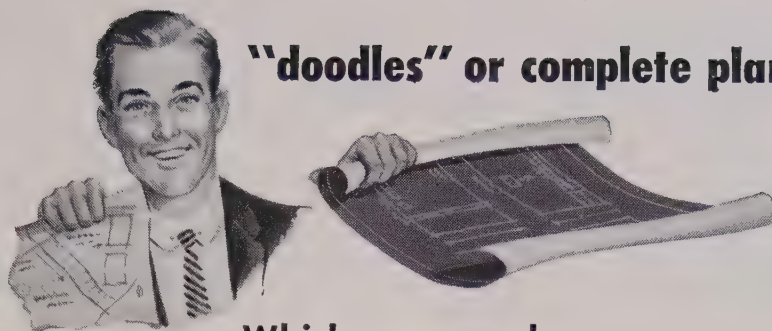
This 4000-lb capacity truck travels at speeds up to 4 mph and has a steering arc of 200 degrees. It weighs 1175 lb. Lowered height of the forks is 3¼-in. The lift height is 4 in. Standard fork lengths are 32, 36, 40, 42, 48, 54 and 60 in. Colson Corp., Elyria, O. Elyria 2202

Fluted Welding Cable

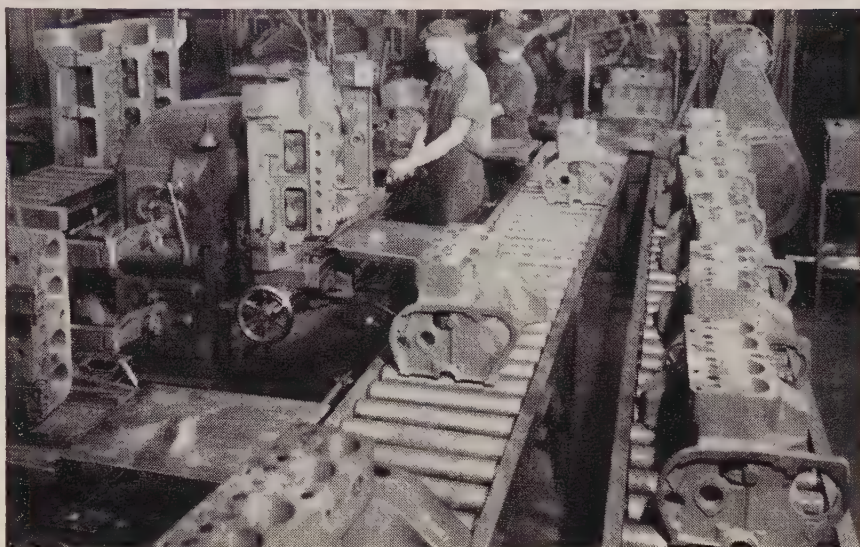
U. S. Royal Gold Welding Cable is light and flexible, making it easy to weld in cramped quarters. The fluted jacket gives better grip and is cooler to handle. The yellow jacket makes it easier to see.



The jacket is made of 60 per cent natural rubber compound. It has high impact, abrasion and moisture resistance. A rayon reinforcing braid provides a nonslip bond between the jacket and insulation. The conductors are wrapped with insulating paper tape. United States Rubber Co., Rockefeller Center, New York 20, N. Y. Circle 7-5000



Whichever you have
**Standard's complete conveyor service
can save you money!**



Many a complex conveying problem has been solved by Standard engineers with only a customer's "doodle" drawing to follow. And often when complete plans are submitted, Standard engineers make recommendations that improve the conveyor application . . . save time and money as well.

If you prefer to do your own conveyor planning, we suggest you send for Bulletin 63-D. Here in 28 fast-reading pages you get all the specifications, drawing and application data on a wide range of Standard Conveyors. This includes gravity and power conveyors and accessory equipment: Handidrive pre-built conveyor units and the complete, self-contained portable conveyor units listed below.

Call your Standard Conveyor representative listed in your classified phone book — or send for copy of Standard General Catalog — address Dept. ST-35.

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities



GRAVITY & POWER Conveyors

ROLLER • SLAT • WHEEL
SECTIONAL • BELT • CHAIN • PUSH-BAR

PORTABLE CONVEYOR UNITS:

HANDBELT • INCLINEBELT • EXTENDOVEYOR • UTILITY BELT-VEYOR
HANDIPILER • LEVEL BELT • LITEWATE • HANDIDRIVE
PNEUMATIC TUBE SYSTEMS

Separate-Motor, Slo-Speed Reducer



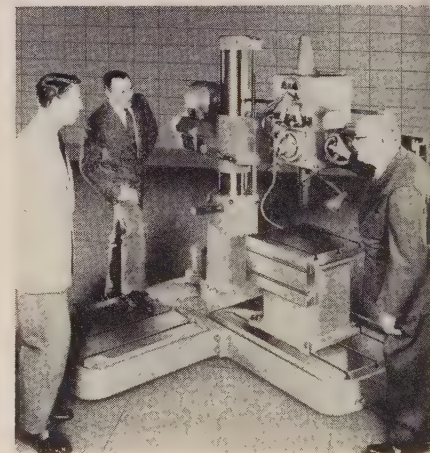
The Slo-Speed gear reducer is being offered for separate motor mounting. It provides the required versatility to economically adjust either horsepower or speeds to meet changing production needs. Without modification, the separate unit can be mounted on the floor, wall or ceiling, with the shaft horizontal or vertical.

The separate motor reducers can be supplied with any foot-mounted motor.

The gear reducer offers the following features: Compactness, positive oil seals, drip splash lubrication, low output shaft. Sterling Electric Motors Inc., 5401 Telegraph Rd., Los Angeles 22, Calif. Raymond 3-6211

Radial Drill with Flame-Hardened Column

A thick-walled, centrifugal casting, it is accurately turned on modern, high-speed lathes, surface flame hardened and finish ground to close tolerances. The drill features two-lever, direct-reading, color-match, spindle-speed and feed-shift dials. All controls are grouped within easy reach of the operator. An alloy steel, the No. 3 Morse taper spindle is mounted in

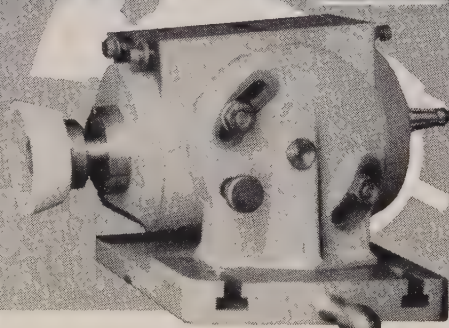


four antifriction bearings. Nine spindle speeds and six power feeds are provided. The entire internal mechanism is forced-spray lubricated by an oil pump.

The 1½-hp main drive motor is mounted on the arm to the left of the column. Power is transmitted through a silent chain and drive-shaft. Safeguards for the operators are included. The radial drill is a 3-ft arm, 7½-in. column machine, with a drilling capacity of 1½-in. in cast iron. It drills to the center of a 77-in. diameter circle. Cincinnati Lathe & Tool Co., Cincinnati 9, O. Redwood 2121

HERE'S A HEAD THAT TILTS

*and Yours Will Nod, Too
When You See What
You Can Do With This
One*



POPE SUPER PRECISION 1 HP,
3600 RPM MOTORIZED TOOL AND CUTTER GRINDER
CLEARANCE ANGLE SWIVELLING HEAD

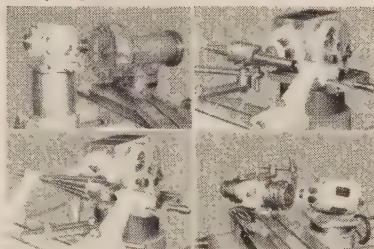
With Angular Adjustment In A Vertical Plane

Give this versatile head the nod and save time and money these seven ways:

1. You can use cup wheels for practically all clearance angles and thus produce a cutting edge on tools that lasts longer because it is stronger.
2. You can keep the tooth rest on the center line of the cutter for practically all grinding on centers or in the work head.
3. You can grind most cutters and reamers all over with a single set-up using the swivelling table and Pope tilting head.
4. You can read all clearance angles directly in degrees from the scale provided on the head. No more mistakes.
5. You can get the right clearance angle on such tough grinding jobs as slab mills, taper reamers, angular cutters and form tools.

6. You have one safe speed — 3600 RPM — for all wheels generally used on cutter grinders. Heat checking of cutters is virtually eliminated.

7. You have a head that's so easy to adjust and use it saves you time and money every time you grind a tool.



Ask us to submit complete specifications including price and delivery.

No. 101

Specify **POPE**

POPE MACHINE CORPORATION
Established 1920
261 RIVER STREET • HAVERHILL, MASSACHUSETTS

NEW Literature

Write directly to the company for a copy

Wire Chart

Covering split gages, it measures 21 x 36 in.—Mettler Machine Tool Inc., Adeline St., New Haven, Conn.

Cleaner-Deruster

Particulars on Oakite Compound No. 131 (an acid detergent for pickling and scale-removal operations) are available—Oakite Products Inc., 134E Rector St., New York 6, N. Y.

Testing Laboratories

"Directory of Commercial and College Testing Laboratories" gives locations, types of products handled and the nature of the investigations—Price, \$1. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Hydraulic Standards

JIC hydraulic standards for industrial equipment are offered. Included are recommended practices for hydraulic packings and seals, examples of packing-code identification, a sample circuit using JIC symbols and a glossary of terms—20 pages. Miller Fluid Power Co., 2040 N. Hawthorne Ave., Melrose Park, Ill.

Coatings

Detailed information on the Phenoline series (for use as tank linings, severe - maintenance painting and floor coverings in acid, alkali and solvent environments) is offered along with corrosion charts—bulletin 600, 4 pages. Carboline Co., 331 Thornton Ave., St. Louis 19, Mo.

Water Softeners

Troubles caused by hard water and the economies effected with water softeners are discussed — bulletin 2386-A, 20 pages. Permutit Co., 330 W. 42nd St., New York 36, N. Y.

Lathe

The cost-cutting, high-speed and precision-operating features of the HLV lathe are covered—24 pages. Hardinge Bros. Inc., Elmira, N. Y.

Surface Grinder

The type CX is covered in detail. Specifications and auxiliary equipment are listed. A clearance diagram and chart are included—catalog CX54, 9 pages. Thompson Grinder Co., Springfield, O.

Cutting Methods

"New Ways To Make Money On Your Cutting Jobs with Job Tested AMF DeWalt Methods" points out

ways to reduce costs and increase profit margins—16 pages. DeWalt Inc., subsidiary, American Machine & Foundry Co., Lancaster, Pa.

Product Line

A full line of machinery for washing, pickling, drying, phosphatizing, degreasing and tempering is presented. Specifications are included—Metalwash Machinery Corp., 917 North Ave., Elizabeth 4, N. J.

Packaging

This catalog includes a history of steel strapping, cost saving and ma-

terial charts, typical application photographs and an illustrated summary of the company's product line—36 pages. Gerrard Steel Strapping Div., United States Steel Corp., 2915 W. 47th St., Chicago 32, Ill.

Mobile Mounts

This bulletin shows how the mounting of machinery can pay off in higher output and lower costs. It includes a summary of Barrymounts, which are engineered for various machines—bulletin 546, 8 pages. Barry Controls Inc., 1000 Pleasant St., Watertown, Mass.



DIHEDRAL COUPLINGS

a Challenge to Complacency

● The AJAX Dihedral Flexible Coupling for direct connected machines is an exclusive and basically new coupling. It overcomes design, manufacturing, assembly and maintenance troubles which have been taken for granted as necessary evils over the years.

ENGINEERS are improving and simplifying design.

PRODUCTION MEN are saving machining and assembly time in the shop and in the field.

USERS are securing amazing results in freedom from costly down time and vastly reduced maintenance costs.

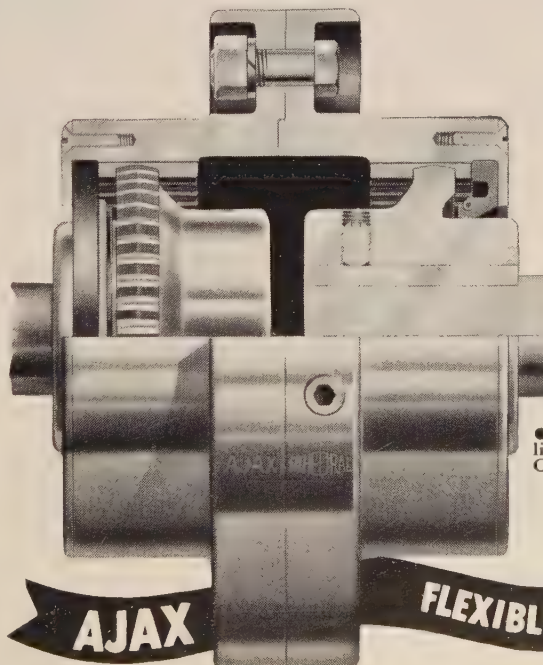
Field-tested for five years, AJAX Dihedral performance is a challenge to complacency. For engineering service or further information about AJAX Dihedral Couplings, consult your telephone directory or write the AJAX factory for Bulletin 52

Ajax Dihedral Performance Facts

1. Handles shaft misalignment,—offset, angular and end float—up to a total of 12 degrees.
2. AJAX design permits holding tooth clearance to lubrication film requirements.
3. More tooth area in contact under misalignment than with any other shape tooth.
4. Load is distributed at center of teeth at point of greatest strength.
5. All teeth hardened to 50-55 Rockwell C to combine hard wear surface with tough core.
6. Seals keep lubricant in and dirt out.
7. Gives Constant peripheral speed.
8. No end-of-tooth contact even under maximum misalignment.
9. Free end float.
10. Standard sizes to fit shafts from 1/2" to 11".

● Also manufacturers of a complete line of AJAX Rubber-Bronze Bushed Couplings and Vibrating Conveyors.

Representatives in
Principal Cities



AJAX

FLEXIBLE COUPLING CO. INC.

WESTFIELD, N. Y.



**One buyer
tells another...**

**"You'll enjoy doing business
with Lamson & Sessions"**

Did you ever stop to wonder why you patronize a particular store, restaurant or barber shop in preference to all others?

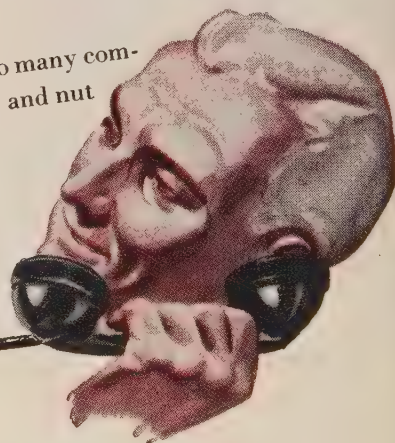
Perhaps it is habit; or maybe convenience. But chances are the main reason is because you *like* the people who serve you. It's a pleasure to do business with them.

Just out of curiosity we asked several of our customers of long standing the reasons behind their year after year loyalty to Lamson & Sessions.

Of course, we received a variety of answers, but the reason that cropped up most frequently was: "Because we *enjoy* doing business with you." Naturally that made us feel pretty good. Our people *do* try to give every customer an extra measure of attention over and above the requirements of common courtesy.

All else being equal, perhaps that's why year after year, so many companies prefer to call on Lamson & Sessions for all their bolt and nut requirements.

You, too, can enjoy this kind of business relationship.



YOU GET MORE WHEN YOU BUY FROM . . .

The LAMSON & SESSIONS Co.

1971 West 85th St. • Cleveland 2, Ohio
CLEVELAND AND KENT, OHIO • BIRMINGHAM • CHICAGO



STEEL demand and production are exceeding many expectations. Now that the first quarter is almost over, what's ahead for the rest of the year?

Production will continue to rise in the second quarter, decline in the third and rise again in the fourth (see cover, this issue).

GOOD YEAR—The year's output of steel for ingots and castings should approximate 105.6 million net tons, the second highest yearly output. Record was 111.6 million tons in 1953.

A 105.6-million-ton output would be equal to 83.9 per cent of the 1955 capacity of 125.8 million tons.

Here's a quarter-by-quarter look at this year:

FIRST QUARTER—The first quarter has been one of uninterrupted climb in steel production. At the beginning of the year, output was at 75 per cent of capacity. By the week ended Mar. 27 it had soared to 95 per cent. First-quarter production will total 27.3 million net tons of steel for ingots and castings—an average of 87 per cent of capacity. The March yield will be approximately 9,935,000 tons, equivalent to 93 per cent of capacity. Only two months have seen higher tonnage output—March, 1953, with 10,168,098 tons and May, 1953, with 9,997,080 tons. The January, 1955, output was 8,837,736 tons (82.7 per cent of capacity), and the February, 1955, output was 8,503,000 tons (88.1 per cent).

The upward thrust in the first quarter had several origins: 1. Consumers quit living off inventories and began buying in line with consumption. 2. Consumption increased as business activity quickened; since mid-January,

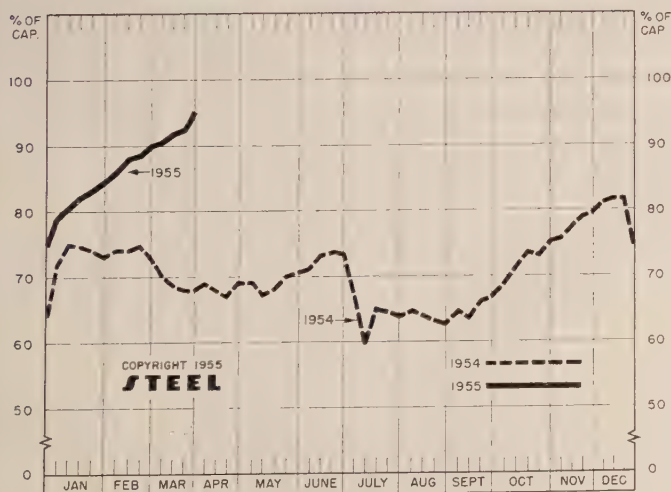
STEEL's industrial production index has been above last year's high point (see p. 55). 3. Export demand has been good. 4. Strong domestic business activity, lengthening delivery dates on steel and possible price increases inspired some rebuilding of steel inventories.

SECOND QUARTER—High steel consumption and inventory rebuilding will continue through most of the second quarter. The quarter is already booked heavily. The production rate will hover around 95 per cent of capacity to make it the biggest quarter of the year. Output should average 92 per cent of capacity and yield 28.9 million net tons of steel for ingots and castings. A seasonal decline should set in by late June.

THIRD QUARTER—Here will be the dog days. Seasonal lethargy will be most pronounced in mid-August, when ingot output will be at the year's low point of 75 per cent of capacity, compared with an average of 63.1 per cent for August, 1954. Buying may lag behind consumption. This quarter's output should average around 77 per cent of capacity and yield 24.2 million tons of steel for ingots and castings. Production trend will be down in the first half of this quarter, up in the last half. Orders already are being booked for the quarter.

FOURTH QUARTER—The uptrend will continue in the fourth quarter to a peak of 85 per cent of capacity. The spark will be production of new model autos. Steel output will slow down for the year-end holidays. Steel consumption and output will equal one another this quarter. The quarter's production will average 80 per cent of capacity and total 25.2 million tons.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Mar. 27	Change	Same Week 1954	1953
Pittsburgh	94	+ 0.5*	74	106.5
Chicago	98.5	+ 1.5*	76.5	106
Mid-Atlantic	92	+ 3	61	97
Youngstown	96	0	66	106
Wheeling	93.5	0	70	100.5
Cleveland	100	+ 4	60	103
Buffalo	99	0	70	106.5
Birmingham	87.5	0	78	98.5
New England	76	- 9	57	85
Cincinnati	87	- 3.5	67	98
St. Louis	95	+ 8	52	82
Detroit	90	+ 2	89	109
Western	96	+ 2	76	109
National Rate...	95	+ 2*	68	101

INGOT PRODUCTION*

	Week Ended Mar. 27	Week Ago	Month Ago	Year Ago
INDEX	139.4†	141.5*	136.4	101.1
(1947-1949=100)				
NET TONS ...	2,240†	2,273*	2,191	1,624
(In thousands)				

*Change from preceding week's revised rate.
†Estimated. ‡Amer. Iron & Steel Institute.
Weekly capacity (net tons): 2,413,278 in 1955;
2,384,549 in 1954; 2,254,459 in 1953.

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Mar. 22 1955	Mar. 15 1955	Month Ago	Feb. Average
(1947-1949=100)	144.7	144.7	144.7	144.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Mar. 22

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1...	\$4.525	Strip, C.R., Carbon	7.493
Rails, Light, 40 lb	5.917	Strip, C.R., Stainless, 430	
Tie Plates	5.275	(lb)	0.415
Axles, Railway	7.500	Strip, H.R., Carbon	5.113
Wheels, Freight Car, 33		Pipe, Black, Buttweld (100	
in. (per wheel)	48.500	ft)	15.000
Plates, Carbon	4.675	Pipe, Galv., Buttweld (100	
Structural Shapes	4.517	ft)	18.605
Bars, Tool Steel, Carbon		Pipe, Line (100 ft)	146.804
(lb)	0.430	Casing, Oil Well, Carbon	
Bars, Tool Steel, Alloy, Oil		(100 ft)	154.216
Hardening Die (lb)	0.525	Casing, Oil Well, Alloy	
Bars, Tool Steel, H.R.,		(100 ft)	227.875
Alloy, High Speed W		Tubes, Boiler (100 ft)	†
6.75, Cr 4.5, V 2.1, Mo		Tubing, Mechanical, Car-	
5.5, C 0.60 (lb)	1.115	bon	†
Bars, Tool Steel, H.R.,		Tubing, Mechanical, Stain-	
Alloy, High Speed W 18,		less, 304 (100 ft)	161.193
Cr 4, V 1 (lb)	1.610	Tin Plate, Hot-dipped, 1.25	
Bars, H.R., Alloy	8.875	lb	8.533
Bars, H.R., Stainless, 303		Tin Plate, Electrolytic,	
(lb)	0.423	0.25 lb	7.233
Bars, H.R., Carbon	5.000	Black Plate, Canmaking	
Bars, Reinforcing	4.963	Quality	6.333
Bars, C.F., Carbon	8.160	Wire, Drawn, Carbon	7.938
Bars, C.F., Alloy	11.375	Wire, Drawn, Stainless,	
Bars, C.F., Stainless, 302		430 (lb)	0.545
(lb)	0.438	Bale Ties (bundle)	5.860
Sheets, H.R., Carbon	4.870	Nails, Wire, 8d Common	7.815
Sheets, C.R., Carbon	5.864	Wire, Barbed (30-rod spool)	7.097
Sheets, Galvanized	7.220	Woven Wire Fence (20-rod	
Sheets, C.R., Stainless,		roll)	16.815
302 (lb)	0.553		
Sheets, Electrical	\$9.350	†Not available.	

STEEL's FINISHED STEEL PRICE INDEX*

	Mar. 23 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 avg.=100)	194.53	194.53	194.53	189.74	156.13
Index in cents per lb	5.270	5.270	5.270	5.140	4.230

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	\$118.23	\$118.23	\$117.82	\$113.70	\$93.18
No. 2 Fdry, Pig Iron, GT.	56.54	56.54	56.54	56.54	46.47
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.97
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	37.75	37.50	36.67	24.33	28.66

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Daily Nonferrous Price Record

	Price Mar. 23	Last Change	Previous Price	Feb. Avg.	Jan. Avg.	Mar. 1954 Avg.
Copper	33.00	Jan. 28, 1955	30.00	33.000	30.180	29.865
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	12.735
Zinc	11.50	Sept. 3, 1954	11.00	11.500	11.500	9.657
Tin	91.50	Mar. 22, 1955	90.875	90.908	87.280	92.518
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	23.20	Jan. 12, 1955	22.20	23.200	22.900	21.500
Magnesium	28.50	Mar. 21, 1955	27.00	27.000	27.000	27.000

Quotations in cents per pound based on
COPPER, deld. Conn. Valley; LEAD, com-
mon grade, deld. St. Louis; ZINC,
prime western, E. St. Louis; TIN,
Straits, deld. New York; NICKEL, el-
ectrolytic cathodes, 99.9%, base size
refinery, unpacked; ALUMINUM, prima-
ingots, 99+%, deld.; MAGNESIUM,
99.8%, Freeport, Tex.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Mar. 23 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.40
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.40
Bars, H.R., deld. Philadelphia	4.55	4.55	4.55	5.302	3.90
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	4.10-4.40
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.40
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.40
Shapes, deld. Philadelphia	4.53	4.53	4.53	4.38	3.40
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.40
Plates, Chicago	4.225	4.225	4.225	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.10	3.40
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.225	4.10	3.40
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.20
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.20
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.10
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.40
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.30
Strip, H.R., Pittsburgh	4.05	4.05	4.05	4.425	3.20
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.20
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45	4.10
Strip, C.R., Chicago	5.85	5.85	5.85	5.70	4.30
Strip, C.R., Detroit	5.90	5.90	5.90	5.45-6.05	4.35-
Wire, Basic, Pittsburgh	5.75	5.75	5.75	5.525	4.80
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.55	5.30
Tin Plate (1.50 lb), box, Pitts.	\$9.05	\$9.05	\$9.05	\$8.95	\$7.50

SEMIFINISHED STEEL

Billets, Forging, Pitts. (NT)	\$78.00	\$78.00	\$78.00	\$75.50	\$63.00
Wire Rods, 3/8"-9" Pitts.	4.675	4.675	4.675	4.525	3.80

PIG IRON, Gross Ton

Bessemer, Pitts.	\$57.00	\$57.00	\$57.00	\$57.00	\$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	59.66	59.66	59.66	59.66	49.66
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, deld. Phila.	55.16	55.16	55.16	60.16	48.90
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	42.30
No. 2 Fdry (Birm.) deld. Cin.	60.58	60.58	60.58	60.43	49.00
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.00

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	\$38.50	\$38.50	\$38.50	\$25.50	\$32.00
No. 1 Heavy Melt, E. Pa.	38.75	39.00	39.50	22.00	25.00
No. 1 Heavy Melt, Chicago	36.00	35.00	34.00	25.50	29.00
No. 1 Heavy Melt, Valley	37.50	37.50	37.50	23.50	31.75
No. 1 Heavy Melt, Cleve.	35.00	35.00	34.00	20.50	28.25
No. 1 Heavy Melt, Buffalo	32.50	32.50	32.50	24.00	28.25
Rails, Rerolling, Chicago	50.50	49.50	49.50	34.50	45.00
No. 1 Cast, Chicago	40.00	40.00	40.00	33.00	41.00

COKE, Net Ton

Beehive, Furn, Connsvl.	\$13.75	\$13.75	\$13.75	\$14.75	\$14.25
Beehive, Fdry, Connsvl.	16.75	16.75	16.75	16.75	16.00
Oven, Fdry, Chicago	24.50	24.50	24.50	24.50	21.50

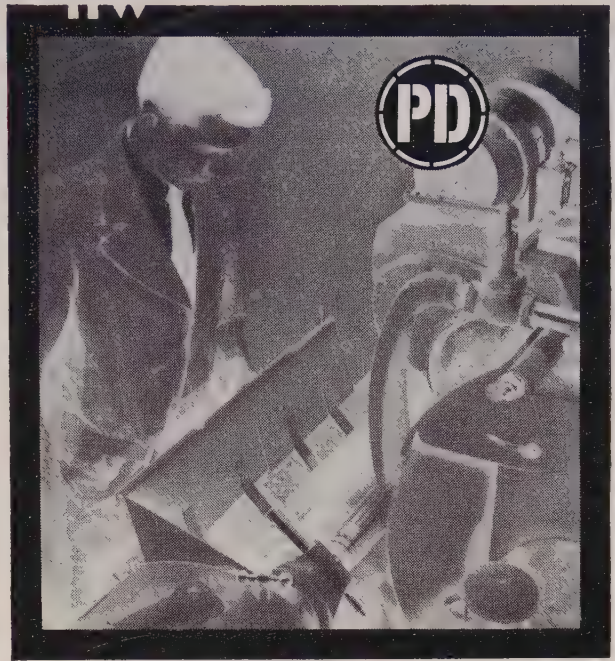
What You Can Use the Markets Section for:

- A source of price information. Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- A directory of producing points. Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.

- A source of price data for making your own comparisons. Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- A source of information on market trends. Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- Reports on iron and steel production, and materials and product shipments.

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Nonferrous Metals

Another round of expansion in aluminum is a definite possibility as governmental officials become worried about the ability of primary capacity to meet future demands

Nonferrous Metal Prices, Pages 126 & 127

WASHINGTON is taking new interest in aluminum expansion. Although the matter is still in the talking stage and lacks official confirmation, the pieces are falling into a pattern: The government may participate financially, and it shows a desire to encourage private concerns to increase primary capacity.

Four main reasons are causing the government to take another look at its "third-round" file which it closed last fall.

1. The current tight supply picture alarms planners, because defense, over the long run, will steadily take more aluminum, particularly for aircraft applications.

2. Aluminum Co. of Canada is holding its shipments to independent U. S. fabricators to 1954's level of 110,000 tons and is rumored to be attempting to cancel its Kaiser and Alcoa contracts. Higher prices on the continent are given as the reason. However, Alcan denies it wants out of its U. S. commitments, claiming that it lives off this market. About 40 per cent of Alcan's output goes to the U. S., and it hopes to increase the tonnage in 1956. Nevertheless, government and industry spokesmen are inclined to rely less on Alcan and to take steps to avoid dependence on imports of the metal.

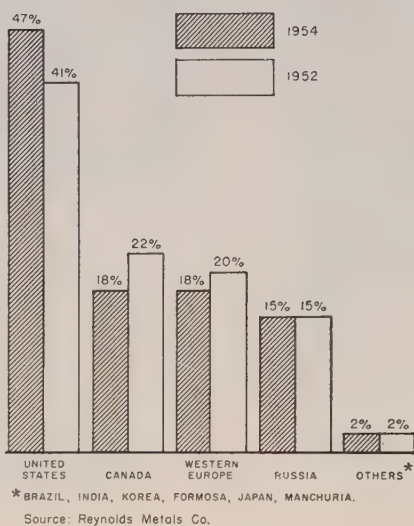
3. General Services Administration contracts to take Aluminum Co. of America's high-cost metal from Massena, N. Y., and Badin, N. C., run out this year and may not be renewed. Alcoa would like to retire these plants or modernize them to bring costs in line with other facilities. If they retire them, a slice of primary capacity will be lost.

4. Current stockpiling commitments, which take between 500 million and 600 million lb a year, will run out about 1958, when civilian demand will be close to current primary capacity. After that, Washington would like to curtail stockpiling. To do so safely, governmental officials feel the nation would need more primary capacity.

Going on Now—A round of expansion of sorts is in progress. Anaconda Copper Mining Co. will come in this fall with its 60,000-ton-a-year

reduction plant in Columbia Falls, Mont. Alcoa is increasing its capacity at Rockdale and Point Comfort, Tex., by 65,000 tons annually. Also, rumor has it that Reynolds Metals Co. would like to increase ca-

ALUMINUM: Who Produces World's Supply



capacity at Listerhill, Ala., and has its eye on Wyoming for a small future expansion. In addition, the government is talking with two other companies not now in primary production, but it hasn't said who they are. And expansion by Kaiser Aluminum Chemical Corp. at Ravenswood, W. Va., shouldn't be ruled out.

All this comes on top of the announcement by Aluminium Ltd. that it will go ahead with expansion at Kitimat, B. C., which will double that facility's capacity. By late 1956, the rated annual capacity will be 181,500 tons; by 1959 it will be 330,000 tons.

Tin: A Political Football

Tin continues its role as a political football in Washington. A Senate committee investigating the future of the Texas smelter was supposed to present its report on Mar. 15, but got an extension to Apr. 1. Nobody is expecting it to report by that date, either. Informed sources expect Texas Democrats, who want a tin industry in their state, to log-

roll the plant into continuous operation at least through 1956. In the meantime, the International Tin Agreement hangs fire, long overdue for enactment. Only about one-third of the consumers and producers' votes needed for ratification have been secured. Netherlands, Spain, France and Belgium appear ready to approve, but they had not done so at presstime. If they approve, only ratification by Indonesia would be required to make the agreement effective.

Price Pressure Grows on Copper

Copper remains in the spotlight as rumors become more persistent that another price hike is in the offing. The London market hit a record high last Monday (Mar. 21) at 45.5 cents a pound, with 45.75 cents asked. There is no indication of a break in that market, and it's a question of how long domestic producers can hold to the 33-cent level. It is doubtful that there will be any more metal at 35 or 36 cents than there was at 33, but it is also doubtful that U. S. producers will go any higher than that.

Tin, Aluminum Get A-Test

Both tin and aluminum will be put to the atomic test in Nevada in the near future. Reynolds Metals Co. has supplied two standard aluminum structures to see how they withstand atomic blast and what modifications need be made to improve their resistance to atomic effects. Also food packaged in aluminum foil and tin containers will be placed in the blast area to determine the resistance of the materials to radioactive contamination.

Market Memos

- Watch for greater governmental interest in processes to reduce nickel oxides to nickel. The nickel shortage is the reason, of course.
- Dow Chemical Co. announced price increases on magnesium products, effective Monday, Mar. 21. Increases ranged from 1 cent per pound for AZ91B diecasting ingot to 8 cent per pound for extrusions.
- After more than two years of price stability, silver advanced to 89.7 cents an ounce and then settled back to the 88-cent range in New York last week.

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Copper and Brass: Heavy copper and wire No. 1 10.00-31.50; No. 2 copper 29.00-30.00; light copper 27.00-28.00; No. 1 composition red brass 24.50-25.00; No. 1 composition turnings 23.00-24.50; yellow brass turnings 16.00-16.50; new brass clippings 21.00-22.00; No. 1 brass rod turnings 18.50-19.00; light brass 16.50-17.00; heavy yellow brass 17.00-18.50; new brass rod ends 19.00-20.00; auto radiators, unsweated 19.00-19.50; cocks and faucets 20.00-20.50; brass pipe 19.50-20.50.

Lead: Heavy 11.50-11.75; battery plate 6.00-6.75; Motype and stereotype 13.50-14.50; electrotype 12.00-12.50; mixed babbitt 12.00-14.00.

Magnesium: Clippings 18.50-19.50; clean castings 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings 28.00-35.00; old sheet 26.00-33.00; turnings 21.00; rods 28.00-35.00.

Nickel: Sheets and clips 57.00-60.00; rolled anodes 57.00-65.00; turnings 40.00-45.00; rod ends 57.00-65.00.

Tin: No. 1 pewter 50.00-55.00; block tin pipe 70.00-75.00; No. 1 babbitt 45.00-48.00.

Zinc: Old zinc 4.75-5.50; new die cast scrap 4.75-5.00; old die cast scrap 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)
Aluminum: 1100 clippings 19.50-21.50; 3003 clippings 19.50-21.50; 6151 clippings 19.50-21.50; 5052 clippings 19.50-21.50; 2014 clippings 19.00-21.00; 2017 clippings 19.00-21.00; 2024 clippings 19.00-21.00; mixed clippings 18.75-20.50; old sheet 17.50-19.50; old cast 17.50-19.50; clean old cable (free of steel) 19.50-21.50; borings and turnings 18.00-20.00.
Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 45.00; light scrap 40.00.

Copper, Brass: No. 1 copper 33.50-35.50; No. 2 copper 32.00-34.00; light copper 30.25-32.25; refinery brass (60% copper) per dry copper content 28.00-31.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 32.50-33.50; No. 2 copper 31.00-32.00; light copper 29.00-30.25; No. 1 composition borings 26.50-27.25; No. 1 composition solids 27.00-27.50; heavy yellow brass solids 21.00-21.50; yellow brass turnings 20.50; radiators 21.50-22.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes \$1.70 per lb.

Copper: Flat-rolled 48.42, oval 47.92, 5000-10,000 lb; electrodeposited 42.78, 2000-5000 lb lots; cast 45.04, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb \$1.015; 100-499 lb 99.50; 500-4999 lb 95.50; 5000-29,999 lb 93.50; 30,000 lb 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1955.

Tin: Bar or slab, less than 200 lb \$1.095; 200-499 lb \$1.08; 500-999 lb \$1.075; 1000 lb or more \$1.07.

Zinc: Bar 20.00, bar or flat top 19.00, ton lots.

CHEMICALS

Cadmium Oxide: \$2.15 per lb, in 100-lb drums.
Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: 100 lb 71.80; 200 lb 71.05; 300 lb 70.80; 400-900 lb 70.05; 1000 lb and over 68.05, effective Feb. 11, 1955.

Copper Sulphate: Crystal, 100 lb 20.50; 200 lb 17.50; 300 lb 16.50; 400 lb 16.00; 500-1900 lb 14.50; 2000 to 10,000 lb 14.25; 10,000 lb and up 14.15. Powder, add 0.5 to above prices. Effective Jan. 31, 1955.

Nickel Chloride: 100 lb 46.50; 200 lb 44.50; 300 lb 43.50; 400-4900 lb 41.50; 5000-9900 lb 39.50; 10,000 lb and over 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb 38.25; 200 lb 36.25; 300 lb 35.25; 400-4900 lb 33.25; 5000-35,900 lb 31.25; 36,000 lb 30.25. All prices eastern delivery, effective Jan. 1, 1955.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 70.10; 100-600 lb 55.90; 700-1900 lb 53.40; 2000-9900 lb 51.70; 10,000 lb or more 50.60.

Stannous Chloride (Anhydrous): Less than 50 lb \$1.558; 50 lb \$1.218, 100-300 lb \$1.063, 400-900 lb \$1.043; 1000-1900 lb \$1.019; 2000-4900 lb 98.20; 5000-19,900 lb 92.10, 20,000 lb and over 86.00.

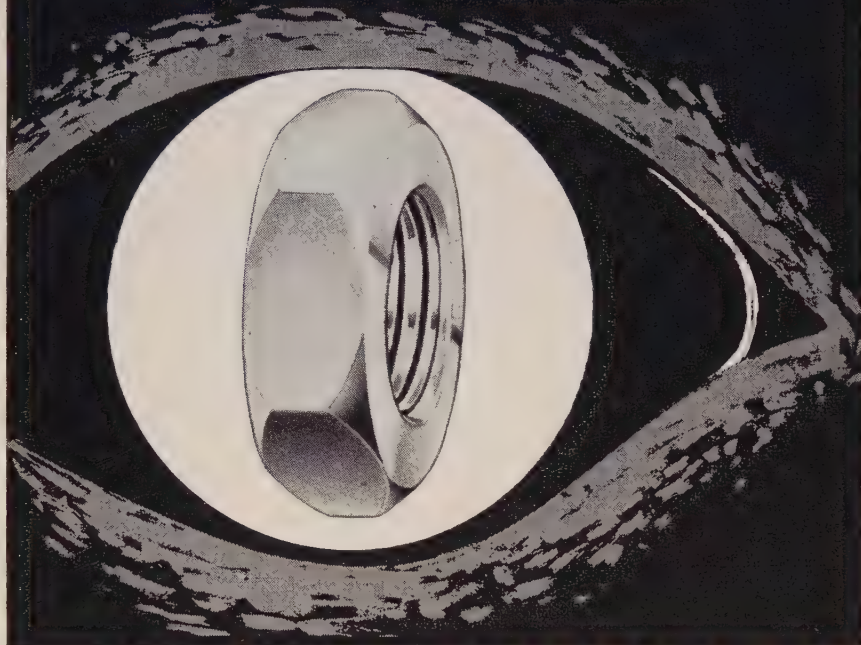
Stannous Sulphate: Less than 5 lb \$1.258; 50 lb 95.80; 100-1900 lb 93.80; 2000 lb and over 91.80.

Zinc Cyanide: Under 1000 lb 54.30; 1000 lb and over 52.30.

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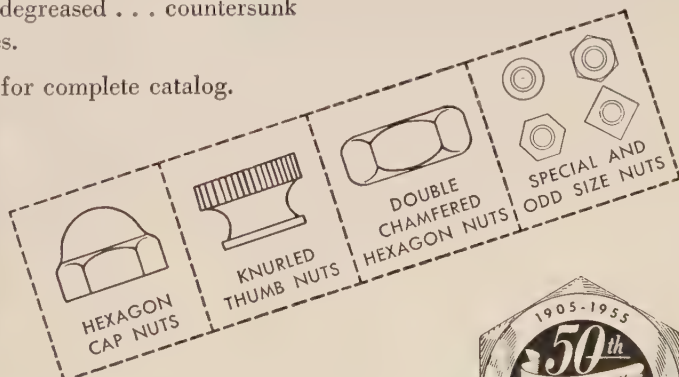
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Standard or "specials", Fischer *turned* nuts cost no more than those produced by other, less accurate methods, yet each is burrless . . . tapped square with the face to Class 2 tolerances . . . cleaned and degreased . . . countersunk on both sides.

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Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company. Key on page 129. Key to footnotes, page 131.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall, Pa. U5\$61.50

INGOTS, Alloy (NT)
Detroit R7\$65.00
Houston S570.00
Midland, Pa. C1865.00
Munhall, Pa. U565.00

BILLETS, BLOOMS & SLABS
Carbon, Re-rolling (NT)

Alliquippa, Pa. J5\$64.00
Bessemer, Pa. U564.00
Bridgeport, Conn. N1969.00
Buffalo R264.00
Clairton, Pa. U564.00
Ensley, Ala. T264.00
Fairfield, Ala. T264.00
Fontana, Calif. K172.00
Gary, Ind. U564.00
Johnstown, Pa. B264.00
Lackawanna, N.Y. B2, 64.00
Munhall, Pa. U564.00
Pittsburgh J564.00
So. Chicago, Ill. R2, U564.00
So. Duquesne, Pa. U564.00
Youngstown R264.00

Carbon, Forging (NT)

Alliquippa, Pa. J5\$78.00
Bessemer, Pa. U578.00
Bridgeport, Conn. N1983.00
Buffalo R278.00
Canton, O. R280.00
Clairton, Pa. U578.00
Conshohocken, Pa. A383.00
Ensley, Ala. T278.00
Fairfield, Ala. T278.00
Fontana, Calif. K186.00
Gary, Ind. U578.00
Geneva, Utah C1178.00
Houston S583.00
Johnstown, Pa. B278.00
Lackawanna, N.Y. B2, 78.00
Los Angeles B387.50
Midland, Pa. C1878.00
Munhall, Pa. U578.00
Pittsburgh J578.00
Seattle B391.50
So. Chicago R2, U5, W14, 78.00
So. Duquesne, Pa. U578.00
So. San Francisco B387.50

Alloy, Forging (NT)

Bethlehem, Pa. B2\$86.00
Buffalo R286.00
Canton, O. R2, T786.00
Conshohocken, Pa. A393.00
Detroit R786.00
Fontana, Calif. K1105.00
Gary, Ind. U586.00
Houston S591.00
Ind. Harbor, Ind. Y186.00
Johnstown, Pa. B286.00
Lackawanna, N.Y. B2, 86.00
Los Angeles B3106.00
Massillon, O. R286.00
Midland, Pa. C1886.00
Munhall, Pa. U586.00
So. Chicago R2, U5, W14, 86.00
So. Duquesne, Pa. U586.00
Struthers, O. Y186.00
Warren, O. C1786.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2\$96.50
Canton, O. R296.50
Cleveland R296.50
Gary, Ind. U596.50
So. Chicago R2, W1496.50
So. Duquesne, Pa. U596.50

SKELP

Alliquippa, Pa. J54.00
Fontana, Calif. K14.775
Munhall, Pa. U53.90
SparrowsPoint, Md. B2, 3.90
Warren, O. R23.90
Youngstown R2, U53.90

WIRE RODS

Alabama City, Ala. R24.675
Alliquippa, Pa. J54.675
Alton, Ill. L14.85
Buffalo B11, W124.675
Cleveland A74.675
Donora, Pa. A74.675
Fairfield, Ala. T24.675
Fontana, Calif. K15.475
Houston S54.925
Indiana Harbor, Ind. Y14.675
Johnstown, Pa. B24.675
Joliet, Ill. A74.675
Kansas City, Mo. S54.925
Kokomo, Ind. C164.775

Los Angeles B35.475
Minnequa, Colo. C104.925
Monessen, Pa. P74.675
No. Tonawanda, N.Y. B11 4.675
Pittsburgh, Calif. C115.325
Portsmouth P124.675
Roebing, N.J. R54.775
So. Chicago, Ill. R24.675
SparrowsPoint, Md. B2, 4.775
Sterling, Ill. (1) N154.675
Sterling, Ill. N154.775
Struthers, O. Y14.675
Torrance, Calif. C115.475
Worcester, Mass. A74.975

STRUCTURALS

Carbon Steel Stand. Shapes

Ala. City, Ala. R24.25
Alliquippa, Pa. J54.25
Bessemer, Ala. T24.25
Bethlehem, Pa. B24.30
Birmingham C154.25
Clairton, Pa. U54.25
Fairfield, Ala. T24.25
Fontana, Calif. K14.90
Gary, Ind. U54.25
Geneva, Utah C114.25
Houston S54.30
Ind. Harbor, Ind. I-24.25
Johnstown, Pa. B24.30
Kansas City, Mo. S54.30
Lackawanna, N.Y. B24.30
Los Angeles B34.95
Minnequa, Colo. C104.70
Munhall, Pa. U54.25
Niles, Calif. P14.90
Portland, Ore. O45.00
Phoenixville, Pa.4.20
Seattle B35.00
So. Chicago U5, W144.25
So. San Francisco B34.90
Torrance, Calif. C114.95
Weirton, W. Va. W64.25

Wide Flange

Bethlehem, Pa. B24.30
Clairton, Pa. U54.25
Fontana, Calif. K15.25
Lackawanna, N.Y. B24.30
Munhall, Pa. U54.25
Phoenixville, Pa. P44.30
So. Chicago, Ill. U54.25

Alloy Stand. Shapes

Clairton, Pa. U55.20
Fontana, Calif. K16.60
Gary, Ind. U55.20
Houston S55.25
Munhall, Pa. U55.20
So. Chicago, Ill. U55.20

H.S., L.A. Stand. Shapes

Alliquippa, Pa. J56.40
Bessemer, Ala. T26.40
Bethlehem, Pa. B26.45
Clairton, Pa. U56.40
Fairfield, Ala. T26.40
Fontana, Calif. K17.05
Gary, Ind. U56.40
Geneva, Utah C116.40
Houston S56.45
Ind. Harbor, Ind. I-2, Y1, 6.40
Johnstown, Pa. B26.45
Kansas City, Mo. S56.45
Lackawanna, N.Y. B26.45
Los Angeles B37.10
Munhall, Pa. U56.40
Seattle B37.15
So. Chicago, Ill. U5, W14, 6.40
So. San Francisco B37.05
Struthers, O. Y16.40

H.S., L.A. Wide Flange

Bethlehem, Pa. B26.45
Lackawanna, N.Y. B26.45
Munhall, Pa. U56.40
So. Chicago, Ill. U56.40

PILING

BEARING PILES

Munhall, Pa. U54.25
So. Chicago, Ill. U54.25

STEEL SHEET PILING

Ind. Harbor, Ind. I-25.075
Lackawanna, N.Y. B25.075
Munhall, Pa. U55.075
So. Chicago, Ill. U55.075

PLATES

PLATES, Carbon Steel

Ala. City, Ala. R24.225
Alliquippa, Pa. J54.225
Alton, Ill. L14.225
Ashland, Ky. (15) A104.225
Bessemer, Ala. T24.225
Bridgeport, Conn. N194.475
Buffalo R24.225
Clairton, Pa. U54.225
Claymont, Del. C224.225
Cleveland J5, R24.225
Coatesville, Pa. L74.225
Conshohocken, Pa. A34.225
Ecorse, Mich. G54.325
Fairfield, Ala. T24.225
Fontana, Calif. (30) K1, 4.875
Gary, Ind. U54.225
Geneva, Utah C114.225
Granite City, Ill. G44.425
Harrisburg, Pa. C54.225
Houston S54.275
Ind. Harbor, Ind. I-2, Y1, 4.225
Johnstown, Pa. B24.225
Lackawanna, N.Y. B24.225
Lone Star, Tex. L64.55
Mansfield, O. E64.225
Minnequa, Colo. C105.075
Munhall, Pa. U54.225
Newport, Ky. N94.225
Pittsburgh J54.225
Riverdale, Ill. A14.225
Seattle B35.125
Sharon, Pa. S34.225
So. Chicago R2, U5, W14, 4.225
SparrowsPoint, Md. B2, 4.225
Steuersville, O. W104.225
Warren, O. R24.225
Weirton, W. Va. W64.225
Youngstown R2, U5, Y1, 4.225

PLATES, Carbon Abras. Resist.

Fontana, Calif. K16.025
Geneva, Utah C115.375

PLATES, Wrought Iron

Economy, Pa. B149.80

PLATES, High-Strength Low-Alloy

Alliquippa, Pa. J56.45
Bessemer, Ala. T26.45
Clairton, Pa. U56.45
Cleveland J5, R26.45
Coatesville, Pa. L76.45
Conshohocken, Pa. A36.45
Ecorse, Mich. G56.55
Fairfield, Ala. T26.45
Fontana, Calif. (30) K1, 7.15
Gary, Ind. U56.45
Geneva, Utah C116.45
Houston S56.50
Ind. Harbor, Ind. I-2, Y1, 6.45
Johnstown, Pa. B26.45
Lackawanna, N.Y. B26.45
Los Angeles B37.35
Munhall, Pa. U56.45
Pittsburgh J56.45
Seattle B37.35
Sharon, Pa. S36.45
So. Chicago, Ill. U5, W14, 6.45
SparrowsPoint, Md. B2, 6.45
Youngstown U5, Y16.45

PLATES, Alloy

Claymont, Del. C225.80
Coatesville, Pa. L75.80
Fontana, Calif. K16.45
Gary, Ind. U55.80
Houston S55.85
Ind. Harbor, Ind. Y15.80
Johnstown, Pa. B25.80
Munhall, Pa. U55.80
Newport, Ky. N95.80
Seattle B36.70
Sharon, Pa. S35.80
So. Chicago, Ill. U5, W14, 5.80
SparrowsPoint, Md. B2, 5.80
Youngstown Y15.80

FLOOR PLATES

Cleveland J55.275
Conshohocken, Pa. A35.275
Harrisburg, Pa. C55.275
Ind. Harbor, Ind. I-25.275
Munhall, Pa. U55.275
So. Chicago, Ill. U55.275

PLATES, Ingot Iron

Ashland i.c.l. (15) A10, 4.475
Ashland i.c.l. (15) A10, 4.975
Cleveland i.c.l. R24.825
Warren, O. c.l. R24.825

BARS

BAR, Hot-Rolled Carbon

Ala. City, Ala. R24.30
Alliquippa, Pa. J54.30
Alton, Ill. L14.50
Atlanta A114.50
Bessemer, Ala. T24.30
Birmingham C154.30
Bridgeport, Conn. N194.55
Buffalo R24.30
Canton, O. R24.40
Clairton, Pa. U54.30
Cleveland R24.30
Ecorse, Mich. G54.40
Emeryville, Calif. J75.05
Fairfield, Ala. T24.45
Fairless Hills, Pa. U55.00
Fontana, Calif. K15.00
Gary, Ind. U54.30
Houston S54.55
Ind. Harbor, Ind. I-2, Y1, 4.30
Johnstown, Pa. B24.30
Kansas City, Mo. S54.55
Lackawanna, N.Y. B24.30
Los Angeles B35.00
Massillon, O. R24.40
Midland, Pa. C184.30
Milton, Pa. M184.30
Minnequa, Colo. C104.75
Niles, Calif. P15.00
No. Tonawanda, N.Y. B11, 4.30
Pittsburgh, Calif. C11, 5.00
Pittsburgh J54.30
Portland, Ore. O45.05
Seattle B3, N14, P23, 5.05
So. Chicago R2, U5, W14, 4.30
So. Duquesne, Pa. U54.30
So. San Fran., Calif. B35.05
Sterling, Ill. (1) N154.30
Sterling, Ill. N154.40
Struthers, O. Y14.30
Torrance, Calif. C115.00
Warren, O. R24.30
Weirton, W. Va. W64.30
Youngstown R2, U54.30

BARS, Hot-Rolled Alloy

Bethlehem, Pa. B25.075
Bridgeport, Conn. N195.225
Buffalo R25.075
Canton, O. R2, T75.075
Clairton, Pa. U55.075
Detroit R75.075
Ecorse, Mich. G55.175
Fontana, Calif. K16.125
Fairless Hills, Pa. U55.225
Gary, Ind. U55.075
Houston S55.325
Ind. Harbor, Ind. I-2, Y1, 5.075
Johnstown, Pa. B25.075
Kansas City, Mo. S55.325
Lackawanna, N.Y. B25.075
Los Angeles B36.125
Massillon, O. R25.075
Midland, Pa. C185.075
So. Chicago R2, U5, W14, 5.075
So. Duquesne, Pa. U55.075
Struthers, O. Y15.075
Warren, O. C175.075
Youngstown U55.075

BARS, H.R. Lead Alloy

Warren, O. C175.825

BARS & SMALL SHAPES, H.R.

High-Strength Low-Alloy

Alliquippa, Pa. J56.45
Bessemer, Ala. T26.45
Bethlehem, Pa. B26.45
Clairton, Pa. U56.45
Cleveland R26.45
Ecorse, Mich. G56.55
Fairfield, Ala. T26.45
Fontana, Calif. K17.70
Gary, Ind. U56.45
Houston S56.70
Ind. Harbor, Ind. I-2, Y1, 6.45
Johnstown, Pa. B26.45
Kansas City, Mo. S56.70
Lackawanna, N.Y. B26.45
Los Angeles B37.15
Pittsburgh J56.45
Seattle B37.20
So. Chicago W146.45
So. Duquesne, Pa. U56.45
So. San Francisco B37.20
Struthers, O. Y16.45
Warren, O. R26.45
Youngstown U56.45

BAR SIZE ANGLES; H.R. Carbon

Bethlehem, Pa. B24.45

BAR SIZE ANGLES; S. Shapes

Alliquippa, Pa. J54.30
Atlanta A114.50
Fontana, Calif. K15.00
Niles, Calif. P15.00

Pittsburgh J54.30
Portland, Ore. O45.05
San Francisco S74.70

BAR SHAPES, Hot-Rolled Alloy

Clairton, Pa. U55.20
Gary, Ind. U55.20
Houston S55.40
Kansas City, Mo. S55.40
Youngstown U55.20

BARS, Cold-Finished Carbon

Ambridge, Pa. W185.40
Beaver Falls, Pa. M12, R2, 5.40
Buffalo B55.40
Camden, N.J. P135.80
Carnegie, Pa. C125.40
Chicago W185.40
Cleveland A7, C205.40
Detroit R75.40
Detroit B5, P175.60
Donora, Pa. A75.40
Elyria, O. W85.40
Franklin Park, Ill. N55.40
Gary, Ind. U55.40
Green Bay, Wis. F75.40
Hammond, Ind. L2, M13, 5.40
Hartford, Conn. R25.90
Harvey, Ill. B55.40
Los Angeles R2, S306.80
Mansfield, Mass. B55.90
Massillon, O. R2, R85.90
Midland, Pa. C185.40
Monaca, Pa. S175.40
Newark, N.J. W185.80
New Castle, Pa. (17) B45.80
Pittsburgh J55.40
Plymouth, Mich. P55.60
Putnam, Conn. W185.90
Readville, Mass. C145.90
So. Chicago, Ill. W145.40
Spring City, Pa. K35.80
Struthers, O. Y15.40
Waukegan, Ill. A75.40
Worcester, Mass. W195.80
Youngstown F3, Y15.40

BARS, Cold-Finished Carbon

(Turned and Ground)

Cumberland, Md. (5) C19, 4.60

BARS, Cold-Finished Alloy

Ambridge, Pa. W186.625
Beaver Falls, Pa. M12, R2, 6.625
Bethlehem, Pa. B26.625
Buffalo B56.625
Camden, N.J. P136.80
Canton, O. T76.625
Carnegie, Pa. C126.625
Chicago W186.625
Cleveland A7, C206.625
Detroit R76.625
Detroit B5, P176.625
Donora, Pa. A76.625
Elyria, O. W86.625
Gary, Ind. R26.625
Green Bay, Wis. F76.625
Hammond, Ind. L2, M13, 6.625
Hartford, Conn. R26.925
Harvey, Ill. B56.625
Lackawanna, N.Y. B26.625
Los Angeles S308.30
Mansfield, Mass. B56.925
Massillon, O. R2, R86.625
Midland, Pa. C186.625
Monaca, Pa. S176.625
Newark, N.J. W186.80
Plymouth, Mich. P56.825
So. Chicago W146.625
Spring City, Pa. K36.80
Struthers, O. Y16.625
Warren, O. C176.625
Waukegan, Ill. A76.625
Worcester, Mass. A76.925
Youngstown F3, Y16.625

BARS, C.F. Lead Alloy

Ambridge, Pa. W187.52
Camden, N.J. P137.52
Carnegie, Pa. C127.52
Chicago W187.52
Cleveland C207.52
Monaca, Pa. S177.52
Newark, N.J. W187.70
Spring City, Pa. K37.70
Warren, O. C177.52

BARS, Reinforcing

(To Fabricators)

Ala. City, Ala. R24.30
Atlanta A114.50
Birmingham C154.30
Buffalo R24.30
Cleveland R24.30
Emeryville, Calif. J75.00
Fairfield, Ala. T24.30
Fairless Hills, Pa. U54.40
Fontana, Calif. K15.00
Ft. Worth, Tex. (42) T44.90
Gary, Ind. U54.30
Houston S54.50

STRIP

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	4.05
Allentown, Pa. P7	4.05
Alton, Ill. L1	4.225
Ashland, Ky. (8) A10	4.05
Atlanta A1	4.25
Bessemer, Ala. T2	4.05
Birmingham C15	4.05
Bridgeport, Conn. N19	4.35
Buffalo (27) R2	4.05
Conshohocken, Pa. A3	4.10
Detroit M1	4.15
Ecorse, Mich. G5	4.15
Fairfield, Ala. T2	4.05
Fontana, Calif. K1	4.825
Gary, Ind. U5	4.05
Ind. Harbor, Ind. I-2	Y1 4.05
Johnstown, Pa. (25) B2	4.05
Lackawanna, N.Y. (25) B2	4.05
Los Angeles (25) B3	4.80
Milton, Pa. M18	4.05
Minnequa, Colo. C10	5.15
N. Tonawanda, N.Y. B11	4.40
Pittsburg, Calif. C11	4.80
Portsmouth, O. P12	4.05
Riverdale, Ill. A1	4.05
San Francisco S7	5.00
Seattle (25) B3, P23	5.05
Seattle N14	5.05
Sharon, Pa. S3	4.05
So. Chicago, Ill. W14	4.05
So. San Francisco (25) B3	4.80
Sparrows Pt., Md. B2	4.05
Sterling (1) N15	4.05
Sterling, Ill. N15	4.15
Torrance, Calif. C11	4.80
Warren, O. R2	4.05
Weirton, W. Va. W6	4.05
Youngstown U5	4.05

STRIP, Hot-Rolled Alloy

Bridgeport, Conn. N19	7.00
Carnegie, Pa. S18	6.70
Fontana, Calif. K1	8.10
Gary, Ind. U5	6.70
Ind. Harbor, Ind. Y1	6.70
Los Angeles B3	7.90
Newport, Ky. N9	6.70
Seattle P23	7.80
Sharon, Pa. S3	6.70
So. Chicago W14	6.70
Youngstown U5, Y1	6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer, Ala. T2	6.15
Conshohocken, Pa. A3	6.15
Ecorse, Mich. G5	6.25
Fairfield, Ala. T2	6.15
Fontana, Calif. K1	7.25
Gary, Ind. U5	6.15
Houston S5	6.40
Ind. Harbor, Ind. I-2, Y1	6.15
Kansas City, Mo. S5	6.40
Lackawanna, N.Y. B2	6.15
Los Angeles (25) B3	6.90
Seattle (25) B3, P23	7.15
Sharon, Pa. S3	6.15
So. San Francisco (25) B3	6.90
Sparrows Pt., Md. B2	6.15
Warren, O. R2	6.15
Weirton, W. Va. W6	6.15
Youngstown U5, Y1	6.15

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	4.30
Warren, O. R2	4.65

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	5.75
Baltimore T6	5.75
Boston T6	6.30
Cleveland A7, J5	5.75
Conshohocken, Pa. A3	5.80
Dearborn, Mich. D3	5.85
Detroit D2, M1, P20	5.85
Dover, O. G6	5.85
Ecorse, Mich. G5	5.85
Follansbee, W. Va. F4	5.75
Fontana, Calif. K1	7.50
Franklin Park, Ill. T6	5.85
Ind. Harbor, Ind. I-2	5.85
Ind. Harbor, Ind. Y1	5.75
Indianapolis C8	5.90
Los Angeles C1	5.75
Middletown, O. A10	5.75
New Bedford, Mass. R10	6.20
New Britain (10) S15	5.75
New Castle, Pa. B4, E5	5.75
New Haven, Conn. A7	6.50
New Haven, Conn. D2	6.20
New Kensington, Pa. A6	5.75
Pawtucket, R.I. R3	6.40
Pawtucket, R.I. N8	6.30
Pittsburgh J5	5.75
Portsmouth, O. P12	5.75

Riverdale, Ill. A1	5.85
Rome, N.Y. (32) R6	5.75
Sharon, Pa. S3	5.75
Sparrows Pt., Md. B2	5.75
Trenton, N.J. (31) R5	7.30
Waikford, Conn. W2	6.20
Warren, O. B9, R2, T5	5.75
Weirton, W. Va. W6	5.75
Worcester, Mass. A7	6.60
Youngstown C8, Y1	5.75

STRIP, Cold-Rolled Alloy

Boston T6	12.80
Carnegie, Pa. S18	12.45
Cleveland A7	12.45
Dover, O. G6	12.45
Fontana, Calif. K1	14.55
Franklin Park, Ill. T6	12.45
Harrison, N.J. C18	12.45
Pawtucket, R.I. N8	12.80
Sharon, Pa. S3	12.45
Worcester, Mass. A7	12.75
Youngstown C8	12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5	8.60
Dearborn, Mich. D3	8.70
Dover, O. G6	8.60
Ecorse, Mich. G5	8.70
Ind. Harbor, Ind. Y1	8.60
Lackawanna, N.Y. B2	8.425

STRIP, Cold-Finished

Baltimore T6	5.75
Boston T6	6.30
Bristol, Conn. W1	6.05
Carnegie, Pa. S18	5.75
Cleveland A7	5.75
Cleveland C7	5.85
Dearborn, Mich. D3	5.85
Detroit D2	5.85
Dover, O. G6	5.85
Franklin Park, Ill. T6	5.85
Harrison, N.J. C18	6.00
Indianapolis C8	6.00
New Britain, Conn. (10) S15	5.75
New Castle, Pa. B4	5.75
New Castle, Pa. E5	5.75
New Haven, Conn. D2	6.20
New Kensington, Pa. A6	5.75
New York W3	6.30
Pawtucket, R.I. N8	6.30
Riverdale, Ill. A1	5.85
Rome, N.Y. (32) R6	5.75
Sharon, Pa. S3	5.75
Trenton, N.J. R5	6.20
Waikford, Conn. W2	6.20
Warren, O. T5	5.75
Weirton, W. Va. W6	5.75
Worcester, Mass. A7, T6	6.60
Youngstown C8	5.85

STRIP, Cold-Finished Spring Steel (Annealed)

Baltimore T6	5.75
Boston T6	6.30
Bristol, Conn. W1	6.05
Carnegie, Pa. S18	5.75
Cleveland A7	5.75
Cleveland C7	5.85
Dearborn, Mich. D3	5.85
Detroit D2	5.85
Dover, O. G6	5.85
Franklin Park, Ill. T6	5.85
Harrison, N.J. C18	6.00
Indianapolis C8	6.00
New Britain, Conn. (10) S15	5.75
New Castle, Pa. B4	5.75
New Castle, Pa. E5	5.75
New Haven, Conn. D2	6.20
New Kensington, Pa. A6	5.75
New York W3	6.30
Pawtucket, R.I. N8	6.30
Riverdale, Ill. A1	5.85
Rome, N.Y. (32) R6	5.75
Sharon, Pa. S3	5.75
Trenton, N.J. R5	6.20
Waikford, Conn. W2	6.20
Warren, O. T5	5.75
Weirton, W. Va. W6	5.75
Worcester, Mass. A7, T6	6.60
Youngstown C8	5.85

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Arma-ture	Elec-tric Motor	Dyna-mo
Beech Bottom, W. Va. W10	8.025	8.50	9.10	10.10
Brackenridge, Pa. A4	8.025	8.50	9.10	10.10
Mansfield, O. E6	8.025	8.50	9.10	10.10
Newport, Ky. N9	8.025	8.50	9.10	10.10
Niles, O. N12	8.025	8.50	9.10	10.10
Vandergrift, Pa. U6	8.025	8.50	9.10	10.10
Warren, O. R2	8.025	8.50	9.10	10.10
Zanesville, O. A10	8.025	8.50	9.10	10.10

C.R. COILS & CUT LENGTHS, (22 Ga.)

Fully Processed	Field	Arma-ture	Elec-tric Motor	Dyna-mo
(Semiprocessed 1/2c lower)	8.425	8.95	9.55	10.55
Brackenridge, Pa. A4	8.425	8.95	9.55	10.55
Granite City, Ill. G4	8.225	8.75	9.35	10.35
Indiana Harbor, Ind. I-2	8.225	8.75	9.35	10.35
Vandergrift, Pa. U5	8.225	8.75	9.35	10.35
Vandergrift, Pa. U6	8.225	8.75	9.35	10.35
Warren, O. R2	8.225	8.75	9.35	10.35
Zanesville, O. A10	8.225	8.75	9.35	10.35

H.R. SHEETS (22 Ga., cut lengths)

Beech Bottom, W. Va. W10	11.95	12.50	13.00	14.00
Brackenridge, Pa. A4	11.95	12.50	13.00	14.00
Newport, Ky. N9	11.95	12.50	13.00	14.00
Vandergrift, Pa. U5	11.95	12.50	13.00	14.00
Zanesville, O. A10	11.95	12.50	13.00	14.00

C.R. COILS & CUT LENGTHS (22 Ga.)

(Semiprocessed 1/2c lower)	Field	Arma-ture	Elec-tric Motor	Dyna-mo
Brackenridge, Pa. A4	14.00	15.00	16.00	17.00
Butler, Pa. A10	14.00	15.00	16.00	17.00
Vandergrift, Pa. U5	14.00	15.00	16.00	17.00
Warren, O. R2	14.00	15.00	16.00	17.00

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed 1/2c lower. § Coils, 1/2c higher.

Pittsburgh J5	8.60
Sharon, Pa. S3	8.60
Sparrows Pt., Md. B2	8.425
Warren, O. R2	8.60
Weirton, W. Va. W6	8.60
Youngstown Y1	8.60

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	6.35
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STRIP, Electroalvanized

Cleveland A7	5.75*
Dover, O. G6	5.75*
Riverdale, Ill. A1	5.75*
Youngstown C8	5.75*
Warren, O. B9, T5	5.75*
Weirton, W. Va. W6	5.75*
Worcester, Mass. A7	6.60*

* Plus galvanizing extras.

Strip, Galvanized (Continuous)

Sharon, Pa. S3	6.15
Warren, O. B9	6.15

TIGHT COOPERAGE HOOP

Atlanta A11	4.775
Riverdale, Ill. A1	4.625
Sharon, Pa. S3	4.475
Youngstown U5	4.475

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Alquippa, Pa. J5	\$7.50	\$7.75	\$8.10
Fairfield, Ala. T2	7.60	7.85	8.20
Fairless Hills, Pa. U5	7.60	7.85	8.20
Gary, Ind. U5	7.60	7.85	8.20
Granite City, Ill. G4	7.60	7.85	8.20
Indiana Harbor, Ind. I-2, Y1	7.60	7.85	8.20
Irvin, Pa. U5	7.60	7.85	8.20
Niles, O. R2	7.60	7.85	8.20
Pittsburg, Calif. C11	8.25	8.50	8.85
Sparrows Pt., Md. B2	7.60	7.85	8.20
Weirton, W. Va. W6	7.60	7.85	8.20
Yorkville, O. W10	7.60	7.85	8.20

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Alquippa, Pa. J5	6.175
Niles, O. R2	6.175

TINPLATE, American 1.25 lb

Alquippa, Pa. J5	\$8.80
Fairfield, Ala. T2	8.90
Fairless Hills, Pa. U5	8.90
Gary, Ind. U5	8.80
Ind. Har. I-2, Y1	8.80
Irvin, Pa. U5	8.80
Pitts. Cal. C11	9.55
Sp. Pt., Md. B2	8.90
Warren, O. R2	8.80
Weirton, W. Va. W6	8.80
Yorkville, O. W10	8.80

HOLLOWWARE ENAMELING

Black Plate (29 Gage)

Follansbee, W. Va. F4	6.20
Gary, Ind. U5	6.20
Granite City, Ill. G4	6.20
Ind. Harbor, Ind. Y1	6.20
Irvin, Pa. U5	6.20
Yorkville, O. W10	6.20

MANUFACTURING TERNES

(Special Coated; Base Box)

Gary, Ind. U5	\$7.80
Irvin, Pa. U5	7.80
Yorkville, O. W10	7.80

MANUFACTURING TERNES

(Light Coated, 6 lb; Base Box)

Yorkville, O. W10	\$8.20
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ROOFING SHORT TERNES

(8 lb Coated)

Gary, Ind. U5	9.80
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WIRE

WIRE, Manufacturers Bright, Low Carbon

Alabama City, Ala. R2	5.75
Alquippa, Pa. J5	5.75
Alton, Ill. L1	5.925
Atlanta A11	5.95
Bartonsville, Ill. K4	5.85
Buffalo W12	5.75
Chicago W13	5.75
Cleveland A7, C20	5.75
Crawfordsville, Ind. M8	5.85
Donora, Pa. A7	5.75
Duluth, Minn. A7	5.75
Fairfield, Ala. T2	5.75
Fostoria, O. (24) S1	5.95
Houston S5	6.00
Jacksonville, Fla. M8	6.27
Johnstown, Pa. B2	5.75
Joliet, Ill. A7	5.75
Kansas City, Mo. S5	6.00
Kokomo, Ind. C16	5.85
Los Angeles B3	6.70
Minnequa, Colo. C10	6.00
Monessen, Pa. P7	5.75
Newark 6-8 ga. I-1	6.40
No. Tonawanda B11	5.75
Palmer, Mass. W12	6.05
Pittsburg, Calif. C11	6.70
Portsmouth, O. P12	5.75
Rankin, Pa. A7	5.75
So. Chicago, Ill. R2	5.75
So. San Francisco C10	6.70
Sparrows Pt., Md. B2	5.85
Sterling, Ill. (1) N15	5.75
Sterling, Ill. N15	5.85
Struthers, O. Y1	5.75
Waukegan, Ill. A7	5.75
Worcester, Mass. A7	6.05

WIRE, MB Spring, High Carbon

Alquippa, Pa. J5	7.20
Alton, Ill. L1	7.375
Bartonsville, Ill. K4	7.30
Buffalo W12	7.20
Cleveland A7	7.20
Donora, Pa. A7	7.20
Duluth, Minn. A7	7.20
Fostoria, O. S1	7.20
Johnstown, Pa. B2	7.20
Kokomo, Ind. C16	7.20
Minnequa, Colo. C10	7.20
Monessen, Pa. P7	7.20
Muncie, Ind. I-7	7.20
Palmer, Mass. W12	7.20
Roebing, N.J. R5	7.20
So. San Francisco C10	7.20
Waukegan, Ill. A7	7.20
Worcester, Mass. A7, T6	7.20

WIRE, Galv'd ACSF for Cores

Alquippa, Pa. J5	6.90	add 0.25c for improved
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WIRE

(Continued)

WIRE, Tire Bead

Alton, Ill. L1	13.25
Bartonville, Ill. K4	13.25
Monessen, Pa. P16	13.15
Portsmouth, O. P12	13.15
Roebbing, N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson, Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville, Ind. M8	8.05
Dover, O. G6	7.95
Fostoria, O. S1	7.95
Franklin Park, Ill. T6	8.05
Kokomo, Ind. C16	8.05
Massillon, O. R8	7.95
Milwaukee C23	8.15
Monessen, Pa. P7, P16	7.95
Pawtucket, R.I. N8	8.25
Rome, N.Y. (32) R6	7.95
Trenton, N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality (6 to 8 gage)

Ala. City, Ala. R2	6.90	7.30**
Alliquippa J5	6.90	7.425*
Atlanta A11	7.00	7.55
Bartonville (48) K4	7.00	7.55
Buffalo W12	6.90	7.30*
Cleveland A7	6.90	7.30*
Crawfordsville M8	7.00	7.55
Donora, Pa. A7	6.90	7.30*
Duluth, Minn. A7	6.90	7.30*
Fairfield, Ala. T2	6.90	7.30*
Houston, Tex. S5	7.15	7.55*
Jacks'ville, Fla. M8	7.425	7.95
Johnstown B2 (48)	6.90	7.45*
Joliet, Ill. A7	6.90	7.30*
Kansas City, Mo. S5	7.15	7.55*
Kokomo C16	7.00	7.40*
Los Angeles B3	7.85	8.25**
Minneapolis C10	7.15	7.55**
Monessen P7 (48)	6.90	7.45
Palmer, Mass. W12	7.20	7.60*
Pitts., Calif. C11	7.85	8.25*
Portsmouth, O. P12	6.90	7.30*
Rankin A7	6.90	7.30*
So. Chicago R2	6.90	7.30**
So. S. Fran. C10	7.85	8.25**
Sparrows Pt. B2 (48)	7.00	7.55*
Sterling (1) (48) N15	6.90	7.45
Struthers, O. (48) Y1	6.90	7.40*
Worcester, Mass. A7	7.20	7.60*

*Based on 11c zinc; †5c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

WOVEN Fence, 9-15 1/2 Ga. Col.

Ala. City, Ala. R2	146*
Ala. City, 17 ga. R2	241**
Ala. City, 18 ga. R2	251**
Alliquippa, Pa. 9-14 1/2 ga. J5	149*
Atlanta A11	151
Bartonville, Ill. K4	151
Crawfordsville, Ind. M8	151
Donora, Pa. A7	146*
Duluth, Minn. A7	146*
Fairfield, Ala. T2	146*
Houston, Tex. S5	151*
Johnstown, Pa. (43) B2	149
Joliet, Ill. A7	146*
Kansas City, Mo. S5	151*
Kokomo, Ind. C16	148*
Minneapolis, Colo. C10	151**
Monessen, Pa. 9 ga. P17	149
Pittsburg, Calif. C11	169*
Rankin, Pa. A7	146*
So. Chicago, Ill. R2	146**
Sterling, Ill. (1) N15	149

†Based on 5c zinc; *11c zinc; †10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop Col.

Alabama City, Ala. R2	155
Atlanta A11	157
Bartonville, Ill. K4	157
Crawfordsville, Ind. M8	157
Donora, Pa. A7	155
Duluth, Minn. A7	155
Fairfield, Ala. T2	155
Joliet, Ill. A7	155
Houston S5	160
Kansas City, Mo. S5	160
Kokomo, Ind. C16	157
Minneapolis, Colo. C10	160
Pittsburg, Calif. C11	179
So. Chicago, Ill. R2	155
So. San Fran. Calif. C10	179
Sparrows Point, Md. B2	157
Sterling, Ill. (1) N15	155

WIRE, Barbed Col.

Alabama City, Ala. R2	159**
Alliquippa J5	156*

Atlanta A11	164
Bartonville, Ill. K4	164
Crawfordsville, Ind. M8	164
Donora, Pa. A7	159*
Duluth, Minn. A7	159*
Fairfield, Ala. T2	159*
Houston, Tex. S5	164*
Joliet, Ill. A7	162*
Joliet, Ill. A7	159*
Kansas City, Mo. S5	164*
Kokomo, Ind. C16	161*
Minneapolis, Colo. C10	164**
Monessen, Pa. P7	162
Pittsburg, Calif. C11	179*
Rankin, Pa. A7	159*
So. Chicago, Ill. R2	159**
So. San Francisco C10	179**
Sparrows Point, Md. B2	164*
Sterling, Ill. (1) N15	162

†Based on 5c zinc; *11c zinc; †10c zinc; **Subject to zinc equalization extras.

WIRE (16 Gage) An'd Galv. Stone

Ala. City R2	13.15	14.70*
Bartonville K4	13.25	15.10
Buffalo W12	13.15	15.10
Cleveland A7	13.15	15.10
Crawfordsville M8	13.25	15.10
Fostoria, O. S1	13.25	14.80*
Johnstown B2	13.15	15.00*
Kokomo C16	13.25	14.80*
Minneapolis C10	13.40	15.10*
Palmer, Mass. W12	13.15	14.70*
Pitts., Calif. C11	13.50	15.05*
So. Chicago R2	13.15	14.70*
Sparrows Pt. B2	13.25	15.10*
Sterling (1) N15	13.15	15.00
Waukegan A7	13.15	14.70*
Worcester A7	13.45	15.10

*Based on 11c zinc; †5c zinc; †10c zinc; **Subject to zinc equalization extras.

NAILS, Stock

To Dealers & Mfrs. (7) Col.	
Alabama City, Ala. R2	137
Alliquippa, Pa. J5	137
Atlanta A11	139
Bartonville, Ill. K4	139
Chicago, Ill. W13	137
Cleveland A9	142
Crawfordsville, Ind. M8	139
Donora, Pa. A7	137
Duluth, Minn. A7	137
Fairfield, Ala. T2	137
Galveston, Tex. D7	145
Houston, Tex. S5	142
Johnstown, Pa. B2	137
Joliet, Ill. A7	137
Kansas City, Mo. S5	142
Kokomo, Ind. C16	139
Minneapolis, Colo. C10	142
Monessen, Pa. P7	137
Pittsburg, Calif. C11	156
Rankin, Pa. A7	137
So. Chicago, Ill. R2	137
Sparrows Pt., Md. B2	139
Sterling, Ill. (1) N15	137
Worcester, Mass. A7	143

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken, Pa. A3	\$8.30
Wheeling, W. Va. W10	\$8.30

STAPLES, Polished Stock

To Dealers & Mfrs. (7) Col.	
Alliquippa, Pa. J5	138
Atlanta A11	140
Bartonville, Ill. K4	139
Crawfordsville, Ind. M8	139
Donora, Pa. A7	138
Duluth, Minn. A7	138
Fairfield, Ala. T2	138
Johnstown, Pa. B2	138
Joliet, Ill. A7	138
Kokomo, Ind. C16	139
Minneapolis, Colo. C10	142
Monessen, Pa. P7	137
Pittsburg, Calif. C11	157
Rankin, Pa. A7	138
Sparrows Pt., Md. B2	140
Sterling, Ill. (1) N15	137
Worcester, Mass. A7	144

FENCE POSTS

Chicago Hts., Ill. C2, I-2	150
Duluth, Minn. A7	150
Franklin, Pa. F5	150
Johnstown, Pa. B2	150
Marion, O. P11	150
Minneapolis, Colo. C10	155
Moline, Ill. R2	155
So. Chicago, Ill. R2	150
Tonawanda, N.Y. B12	150
Williamsport, Pa. S19	150

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants)	
4 in. and shorter:	
1/2 in. & smaller diam	2
Over 4 in. through 6 in.:	
1/2 in. & smaller diam	+3
6 in. and shorter:	
3/4 in. and 5/8 in.	+4
3/4 in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	23
Step, Elevator, Tap and Sleigh Shoe	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P. Hex, regular & heavy:	
3/4" and smaller	55
3/4" to 1 1/2", inclusive	58
1 1/2" to 1 3/4", inclusive	60
1 3/4" and larger	65
C.P. Hex regular & heavy:	
All sizes	55
Hot Galv. Nuts (all types):	
3/4" or smaller	38
3/4" to 1 1/2", inclusive	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	55

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)	
1 in. diam x 8 in. and shorter	34
1 in. and smaller diam x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)	
No. 10 and smaller	34
1/4 in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)	
Plain finish	43
Plated finishes	23

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)	
6 in. or shorter:	
1/4 in. through 3/4 in.	38
3/4 in. through 1 in.	15
Longer than 6 in.:	
3/4 in. through 1 in.	20
1 in. through 1 1/2 in.	27

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.	
Structural 1/2 in., larger 9/25 7/8 in. under. List less 37%	

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers	List
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Footnotes

(1) Chicago base.	
(2) Angles, flats, bands.	
(3) Merchant.	
(4) Reinforcing.	
(5) 1 1/2" to 1 7/8"; 1 7/8" to 1 15/16"; 1 15/16" to 1 7/5" 5/16c.	
(6) Chicago or Birm. base.	
(7) To jobbers, 3 cols. lower.	
(8) 16 Ga. and heavier.	
(9) 6 in. and narrower.	
(10) Pittsburgh base.	
(11) Cleveland & Pitts. base.	
(12) Worcester, Mass., base.	
(13) Add 0.25c for 17 Ga. & heavier.	
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.	
(15) 3/4" and thinner.	
(16) 40 lb and under	

BOILER TUBES

Net base c.i. prices, dollars per 100 ft. mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

OD	B.W. Gage	Seamless	Elec. Weld
In.		H.R.	C.D.
1	13	19.59	19.00
1 1/4	13	23.21	18.77
1 1/2	13	21.40	20.75
1 3/4	13	26.28	24.52
2	13	23.33	27.48
2 1/4	13	31.91	30.95
2 1/2	12	34.63	33.59
2 3/4	12	38.15	37.00
3	12	41.31	40.07
		44.05	42.72

RAILWAY MATERIALS

RAILS	Standard	All	Tee Rails
No. 1	No. 2	No. 2	Under
Bessemer, Pa. U5	4.45	4.35	5.35
Ensley, Ala. T2	4.45	4.35	5.35
Fairfield, Ala. T2	4.45	4.35	5.35
Gary, Ind. U5	4.45	4.35	4.40
Indiana Harbor, Ind. I-2	4.45	4.35	4.40
Johnstown, Pa. B2	4.45	4.35	5.35
Lackawanna, N.Y. B2	4.45	4.35	5.35
Minneapolis, Colo. C10	4.45	4.35	5.85
Steeltown, Pa. B2	4.45	4.35	5.35
Williamsport, Pa. S10	4.45	4.35	5.35

TIE PLATES

Fairfield, Ala. T2	5.275
Gary, Ind. U5	5.275
Ind. Harbor, Ind. I-2	5.275
Lackawanna, N.Y. B2	5.275
Minneapolis, Colo. C10	5.275
Seattle B3	5.425
Steeltown, Pa. B2	5.275
Torrance, Calif. C11	5.425

JOINT BARS

Bessemer, Pa. U5	5.425
Fairfield, Ala. T2	5.425
Ind. Harbor, Ind. I-2	5.425
Joliet, Ill. U5	5.425
Lackawanna, N.Y. B2	5.425
Minneapolis, Colo. C10	5.425
Steeltown, Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00
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STANDARD TRACK SPIKES

Fairfield, Ala. T2	7.30
Ind. Harbor, Ind. I-2, Y1	7.30
Kansas City, Mo. S5	7.30
Lebanon, Pa. B2	7.30
Minneapolis, Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B2	7.80
So. Chicago, Ill. R2	7.30
Struthers, O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)	
Sponge iron:	Cents
98 & % Fe, annealed	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.i.f. N.Y., c.i. in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of 3/4 in. x 1.3 in.	21.00
Annealed, 99.5% Fe	36.50
Unannealed (99 & % Fe)	32.50
Unannealed (99 & % Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frght. allowed:	
Carlots	32.20
Ton lots	34.20

Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	31.25-39.75†
Bronze, 5000-lb lots	51.50-54.7

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer		Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District					Youngstown District				
Alabama City, Ala. R2	52.38	52.88	....	....	Hubbard, O. Y1	....	....	56.50	....
Birmingham R2	52.38	52.88	....	....	Sharpville, Pa. S6	56.00	56.50	56.50	57.00
Birmingham U6	....	52.88	56.50†	....	Youngstown Y1	....	....	56.50	57.00
Gadsden, Ala. R2	52.38	52.88	....	....	Youngstown U5	56.00	....	....	57.00
Cincinnati, deld.	....	60.58	....	....	Mansfield, O. deld.	60.90	....	61.40	61.90
Buffalo District					Duluth I-3	56.00	56.50	56.50	57.00
Buffalo H1, R2	56.00	56.50	57.00	57.50	Erie, Pa. I-3	56.00	56.50	56.50	57.00
Tonawanda, N.Y. W12	56.00	56.50	57.00	....	Everett, Mass. E1	60.50	61.00	61.50	....
No. Tonawanda, N.Y. T9	....	56.50	57.00	57.50	Fontana, Calif. K4	62.00	62.50	....	....
Boston, deld.	66.65	67.15	67.65	....	Geneva, Utah C11	58.00	56.50	....	....
Rochester, N.Y., deld.	59.02	59.52	60.02	....	Granite City, Ill. Q4	57.90	58.40	58.90	....
Syracuse, N.Y., deld.	60.12	60.62	61.12	....	Ironton, Utah C11	56.00	56.50	....	....
Chicago District					Lone Star, Texas L6	52.00	52.50*	52.50	....
Chicago I-3	56.00	56.50	56.50	57.00	Minnequa, Colo. C10	58.00	59.00	59.00	....
Chicago R2	56.00	....	56.50	....	Rockwood, Tenn. T2	....	52.50*	56.50	....
Gary, Ind. U5	56.00	....	56.50	....	Tledo, O. I-3	56.00	56.50	57.00	....
Indiana Harbor, Ind. I-2	56.00	....	56.50	....	Cincinnati, deld.	61.76	62.26	....	....
So. Chicago, Ill. W14, Y1	56.00	56.50	56.50	....				
So. Chicago, Ill. U5	56.00	....	56.50	57.00					
Milwaukee, deld.	58.17	58.67	58.67	59.17					
Muskegon, Mich., deld.	....	62.80	62.80	....				
Cleveland District									
Cleveland A7, R2	56.00	56.50	56.50	57.00					
Akron, O. deld.	58.75	59.25	59.25	59.75					
Lorain, O. N3	56.00	....	....	57.00					
Mid-Atlantic District									
Bethlehem, Pa. B2	58.00	58.50	59.00	59.50					
New York, deld.	....	62.28	62.78	....				
Newark, deld.	61.02	61.52	62.02	62.52					
Birdsboro, Pa. B10	58.00	58.50	....	....			
Chester, Pa. C31	....	48.50	49.00	....				
Philadelphia, deld.	....	50.16	50.66	....				
Steelton, Pa. B2	58.00	58.50	59.00	59.50					
Swedeland, Pa. A3	58.00	58.50	59.00	59.50					
Philadelphia, deld.	59.66	60.16	60.66	61.16					
Troy, N.Y. R2	58.00	58.50	59.00	59.50					
Pittsburgh District									
Nevels Island, Pa. P6	56.00	56.50	56.50	57.00					
Pittsburgh (N&S sides),									
Aliquippa, deld.	....	57.87	57.87	58.37					
McKees Rocks, deld.	....	57.54	57.54	58.04					
Lawrenceville, Homestead,									
Wilmerding, Monaca, deld.	....	58.16	58.16	58.66					
Verona, Trafford, deld.	58.19	58.69	58.69	59.19					
Brackenridge, deld.	58.45	58.95	58.95	59.45					
Bessemer, Pa. U5	56.00	....	56.50	57.00					
Clairton, Rankin, So. Duquesne, Pa. U5	56.00	....	....	....		
McKeesport, Pa. N3	56.00	....	....	57.00					
Midland, Pa. C18	56.00	....	....	....		

*Low phos, southern grade. †Phos, 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over. **Manganese:** Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add \$1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson, O. G2, J1	\$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add \$1 for each 0.50 Si to 18%; \$1 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P)

Niagara Falls, N.Y. P15	\$80.50
Keokuk, Iowa, (Open-hearth & Fdry, freight allowed K2)	85.00
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland A7 (Intermediate)	\$61.00
Lyles, Tenn. T3	70.00
Rockwood, Tenn. T3	70.00
Steelton, Pa. B2	64.00
Philadelphia, deld.	67.55
Troy, N.Y. R2	64.00

Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; Philadelphia, New York, Boston and Los Angeles, 10 cents; Buffalo, 25 cents on C.R. and galvanized sheets, C.F. and alloy bars and 20 cents on other commodities; Houston, Seattle, Spokane, Wash., no charge.

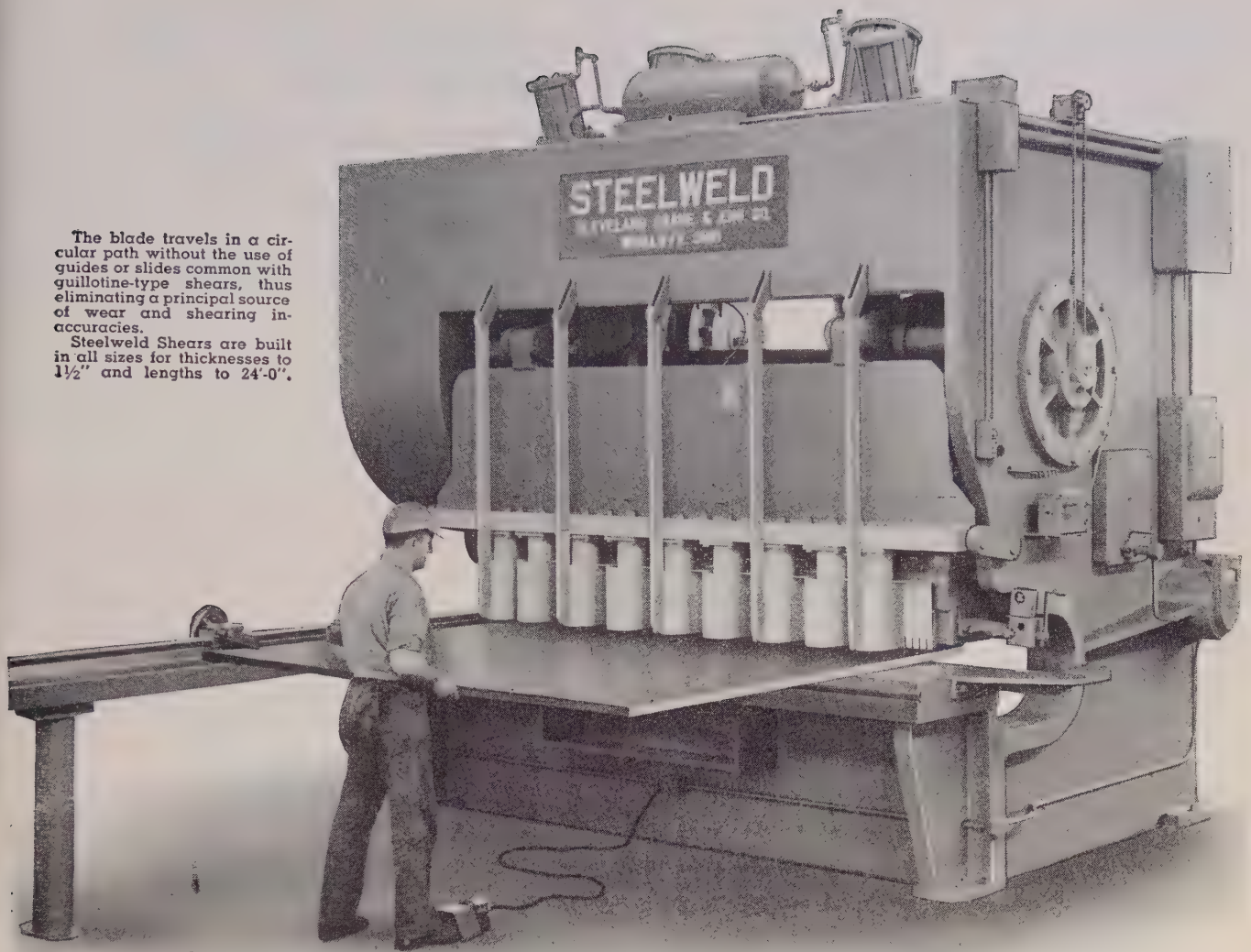
	SHEETS				STRIP		BARS		H.R. Alloy	Standard Structural	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302**	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	4140††§	Shapes	Carbon	Floor
Baltimore	6.02	7.51	7.79	....	6.69	...	6.68	8.52*	12.54	6.72	6.37	7.76
Birmingham	6.35	7.35	8.25²	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	45.28*	7.47	...	7.20	8.60	12.30	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.85	12.00	6.72	6.65	7.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	46.05	6.62	...	6.51	7.25	11.75	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.30	46.10	6.86	...	6.75	7.55	12.00	6.86	6.81	7.89
Cleveland	6.38	7.38	8.25	46.16	6.72	...	6.57	7.35	11.81	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.54	11.95	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45⁴	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	....	7.60	7.35	8.75
Los Angeles	7.50	9.35	9.95	50.15	7.85	11.75	7.45	10.15	13.15	7.65	7.45	9.55
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.44	11.84	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	....	6.86	7.60	....	7.04	6.87	...
New York	6.97	7.91	8.79	44.95	7.56	...	7.37	8.73*	12.13	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.26	41.98*	6.96	8.80	6.74	7.86*	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	46.00	6.72	...	6.51	7.55	11.75	6.69	6.52	7.64
Portland, Oreg.	7.00	7.75	8.90	43.50	7.25	...	7.05	10.20	14.00	7.00	6.85	8.75
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.64*	12.04	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	...	7.17	8.01	....	7.35	7.18	8.30
San Francisco	7.55	8.95	8.70	51.65	7.80	...	7.35	10.05	13.05	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	51.00	8.20	...	7.80	10.95	13.50	7.75	7.80	9.60
Spokane	8.35	9.65⁷	10.05	....	7.80	...	7.80	10.85§§	14.25	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11-cent zinc except in New York, Philadelphia, Los Angeles, Cincinnati, Cleveland, Pittsburgh, San Francisco (11.50-cent zinc) and in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **¼-in. and heavier; ††as annealed; ‡‡prices include \$2 for crating; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; ² 500 to 9999 lb; ³ 4000 lb and over; ⁴ 1000 to 1999 lb; ⁵ 1000 lb and over; ⁶ 1500 to 3999 lb; ⁷ 2000 to 3999 lb; ⁸—f.o.b. local delivery in lots of 10,000 lb and over.

The blade travels in a circular path without the use of guides or slides common with guillotine-type shears, thus eliminating a principal source of wear and shearing inaccuracies.

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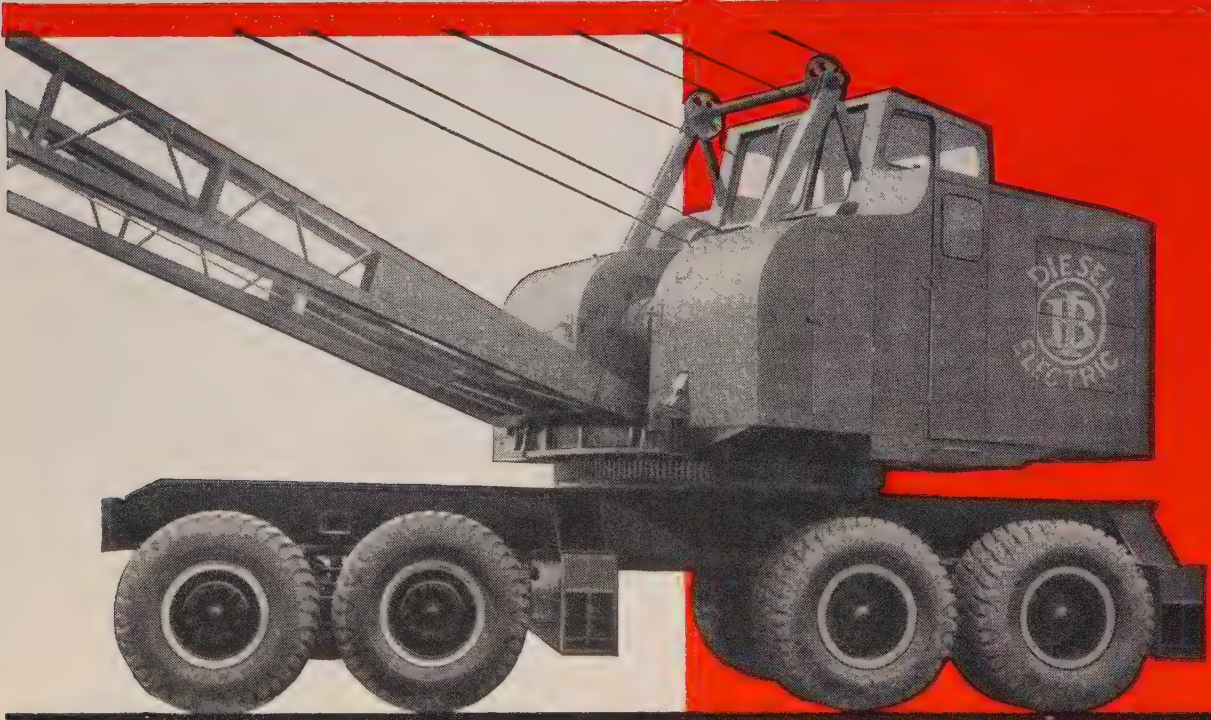


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BROWNHOIST

Tool Steel Makers See a Turn for the Better

YOU DON'T VENTURE far out on the limb when you're in a specialty operation with short backlogs. Despite their innate caution, tool steel producers like what they see in the first half of this year. Based on current market strength, they estimate 1955 sales will regain ground lost in 1954, may equal 1953 shipments.

American Iron & Steel Institute statistics show 1951 established a postwar record in mill shipments of tool steel with 176,014 tons shipped. Since that year shipments dropped—to 122,220 tons in 1952, 117,631 tons in 1953 and 85,012 tons in 1954.

Exceeds Last Year—Currently, production is running as much as 33 per cent above year-ago rates. January tool steel output was the largest since that of March, 1954. As users place orders only three to six weeks ahead of delivery time, the third and fourth quarters are obscure. A few producers frankly predict second-half sales will be as strong as those of the first half. All signs point to 1955 totals equaling 1953, possibly becoming the best peacetime tool steel year on record.

Most of the metalworking industry—plants doing machining and metal forming—depends to some extent on tool steels. That's why producers expected the long inventory reduction of 1954 to be balanced by a sales revival this year. They weren't disappointed. "Incoming orders point to a good first half this year," says Frank B. Rackley, president, Jessop Steel Co., Washington, Pa.

Automakers Need Tools—Heavy automotive production has raised cutting tool and die requirements this year. Shipments may decline in the last half of 1955. That's the main worry of tool steel producers, but a wide variety of consumers should take up the slack. Demand for high-speed steel for jet aircraft should be strong for two years. Estimates have pegged 1955 requirements 50 per cent above those of 1954.

Toolmakers' requirements will be better than those of last year, if only because their inventories were low in 1954. Suppliers to the textile industry report that industry dropped out as a customer last year. Now orders are flowing in.

Pushing for Orders—Sales campaigns are mapped to insure that sales remain strong the balance of this year. Firth Sterling Inc., Pittsburgh, plans an expanded advertising-sales promotion program for maximum efficiency of sales effort.

E. W. Kalb, manager of steel sales, reports a marked increase over 1954 sales. Optimism at Firth Sterling stems from the fact that order increases are general, with a wide variety of customers participating.

Despite a better outlook, don't expect a boom in tool steel. Backlogs are increasing now to four-to-six weeks, but a producer will lose customers if his deliveries lag. "There are other firms waiting to catch any orders we miss," says one. As late as

IT TAKES LESS TOOL STEEL TODAY TO DO THE JOB

Pounds of tool steel consumed per ton of ingot steel produced



Feb. 15, tool steelmakers were taking orders for March delivery.

Results of Improvements—Another reason tool steel output doesn't rise and fall proportionately with tonnage steel production is that technical developments cause tool steel to do a better job per pound than before. George A. Roberts, vice president, technology, Vanadium-Alloys Steel Co., Latrobe, Pa., points out that in 1940, roughly 3.5-lb of tool steel were consumed per ton of ingot steel produced. In 1954, 2 lb of tool steel were consumed per ton of ingot steel.

With new technological developments and new grades introduced, fabricators are turning to alloy tool steels increasingly, adds Mr. Roberts. In 1940, the ratio of alloy tool steel shipments to carbon tool steel was 2 to 1. In 1954, the ratio was almost 6 to 1.

Changes in Store—Developments to watch in tool steel in 1955 include increasing demand for improved wear resistance and growing popularity of

free-machining steels. Tool and die-makers are expressing greater interest in such steels, Vanadium-Alloys officials comment. Although the industry realizes that such additives as lead or sulphur tend to improve machinability, there's much to learn about possible applications.

Producers work closely with fabricators of tool steel and will continue to do so. When research casts new light on applications of the metal, consumers hear about developments rapidly. Don't expect any technological changes to sweep the industry suddenly. Tool steel production will remain a specialty industry which takes the time to be right.

Tool Steel . . .

Kennametal Inc., Latrobe, Pa., announced a price increase of 10 per cent, effective Mar. 21, on all cemented carbide blanks and standard carbide tools. The increase covers, with few exceptions, all products used in metalworking.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 129 & 130

Cold-rolled sheet producers generally are out of the market for the second quarter. While some haven't opened their books for shipments beyond that period, several of the largest makers are accepting orders for July, August and September delivery, based on their customers' current consuming pattern. The same is true of galvanized sheets. Hot-rolled sheets are still available for May shipment, deliveries ranging from 7 to 11 weeks, inclusive.

Much of current demand is from automakers which are finding their sales higher than had been expected. A drop in auto tonnage in the third quarter is anticipated, but some of the resulting slack may be taken up by demands from other consumers. Warehouses and appliance makers are pressing for tonnage, and their orders won't be filled until the third quarter.

Some hardship cases are cropping up among consumers who underestimated their needs. They, generally, are being compelled to turn to the warehouses for relief. In some cases, consumers of enameling sheets are again substituting cold-rolled carbon for some parts. Reports are that unless the nickel supply improves, allocation of stainless products may be only a matter of weeks.

Last week, U. S. Steel Corp., an-

nounced a revision in galvanized extras, including item quantity extras on a wide range of galvanized items, substantial increases in forming charges on roofing and siding and reductions in width extras on some sizes.

One leading producer increased prices 5 per cent on carbon wasters.

Tin Plate . . .

Tin Plate Prices, Page 130

Tin mill operations are increasing. Last week, Wheeling Steel Corp. projected an increase from 25 to 30 turns per week on its electrolytic tin plate lines at its Yorkville, O., works. This is equivalent to capacity operation.

On the West Coast, canmakers say they are not particularly concerned over the reported invasion by a paper processing firm into the beer container business.

Steel Bars . . .

Bar Prices, Page 128

Shipment promises on bars are becoming more extended as consumers' requirements continue to increase. Warehouses and users are building inventories. There appears to be no particularly outstanding demand, except automotive. Volume is made up noticeably of orders from diversified consuming channels. Early May shipment now appears to be about the best that buyers can get on hot-rolled carbon flats, rounds and bar-size angles. Demand for alloy bars is heavier, with emphasis on current needs.

Improved activity in the manufacture of farm machinery is exerting a wholesome influence on the market in the Chicago area. Good demand for harvesting equipment is reported—this is being reflected in bar volume. Prospects for sales of corn pickers are said to be equally as good. Bar tonnage can't be obtained in the district for shipment in much less than six to eight weeks.

Plates . . .

Plate Prices, Page 128

Plate business continues to spurt. Little tonnage is available in the East under six weeks. Some mills are booked up 10 weeks and 12 weeks ahead.

Apart from general improvement, inquiry is featured by requirements for the Tidewater Oil refinery at Delaware City, Del. Tidewater already let a \$7 million contract to the Chicago Bridge & Iron Co. for a number of large storage tanks. Also, 12,000 tons will be required for the Patapsco tunnel project at Baltimore.

Prices Unchanged

Stainless steel, clad steel, tool steel and pipe prices remain unchanged. Current price schedules on these products were published in full on page 172 in the Mar. 21 issue of STEEL.

Maritime Commission, Washington, closes bids June 14 on one vehicle cargo ship. Its loaded displacement is 18,150 tons. The vessel will be built for the Military Sea Transportation Service, Navy.

Railroad inquiry is picking up, with the Pennsylvania inquiring for plates and a still larger tonnage of sheets for the repair of 2000 box cars. Construction will begin this summer on a 60,000-ton aircraft carrier at the Brooklyn Navy Yard. Estimated cost: \$190 million.

Order volume is surprisingly good in the Chicago market and some producers are booked up through May. Demand has been bolstered by an upswing in construction of freight cars and the repairing of old ones. Car building this year is expected to range up to 35,000 units. Further increase in demand will spring up shortly for the seasonal rise in industrial construction and highway building.

Despite the improvement in demand and firm prices on plates, tank fabricators continue to cut prices to get more business.

Tubular Goods . . .

Sales of oil country goods continue their strong rally. Producers are receiving orders through the second quarter but are not booked solidly for that period.

Drilling should be heavy most of this year, and demand for pipe should closely approximate requirements.

Buttweld pipe sales show steady improvement. A leading Pittsburgh producer says March will be the best month for sales in more than a year. Cast iron pipe volume is rising seasonally.

Shipment of the first commercial order for cold expanded seamless pipe is being made from the Lorain Works of U. S. Steel Corp.'s National Tube Division. The new pipe maintains the complete reliability of seamless. Mechanical cold work adds uniform high strength and weldability. Equipment at the Lorain Works is designed to expand pipe in the size range of 16 to 26 in. in outside diameter.

Consolidated Western Division, U. S. Steel Corp., will begin production of large diameter pipe at its new

Provo, Utah, plant next month. Electric weld pipe produced will be used for pipelines.

Structural Shapes . . .

Structural Shape Prices, Page 128

Orders and inquiries for structurals are accelerating as seasonal requirements begin to burgeon. Fabricators are in a comfortable position generally, and prospects for a steady flow of orders are brightened by currently expanding inquiry. Some sharp competition is being met.

In general, structural shape deliveries are gradually becoming more extended, especially wide-flange sections.

Highway bridge demand is heavy in New England. Structural and sheet piling orders are increasing. In the Chicago market, while seasonal influences are noticeably present, activity to some extent is due to highway and toll road construction.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 128

Seasonal pickup in reinforcing bar demand is noted generally. Strong demand is bolstered by more Nikes, special aircraft defense installations. Average tonnage required by each installation is 100 tons.

Reinforcing bar distributors have heavy backlogs in New England, with fabricating and engineering activities increasing. For bridges, close to 6500 tons have been placed in the area. While prices are inclined toward the bargain side, mill quotations are firm.

Pig Iron . . .

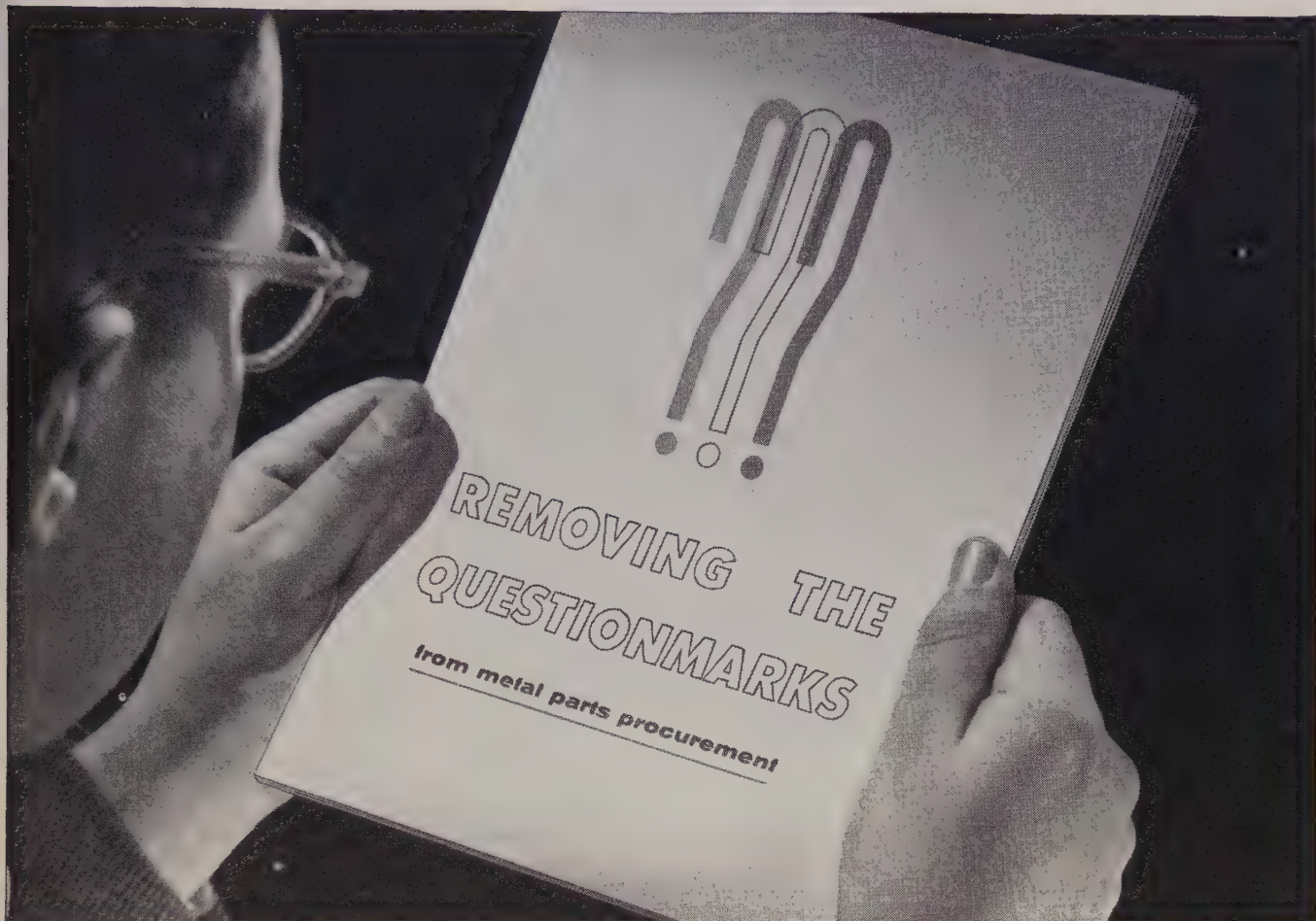
Pig Iron Prices, Page 132

Blast furnace production totaled 5,442,767 net tons in February—5,394,585 tons were pig iron and 48,182 tons ferromanganese and spiegeleisen, reports the American Iron & Steel Institute. This compares with the output of 5,784,653 tons in January, 5,729,404 being pig iron and 55,249 ferromanganese and spiegeleisen. In February, 1954, output totaled 4,810,554 tons, of which 4,764,613 tons were iron and 45,941 ferromanganese and spiegeleisen.

Pig iron buying has recovered slightly from the average daily level for February, and is about on a parity with that for January. Demand is described as fairly brisk at some points, but, in general, sellers are disappointed by the current volume. Foundry requirements are improved but spotty.

Reflecting the continued upturn in demand, more blast furnaces are be-

specific ways to increase profits thru metal stampings



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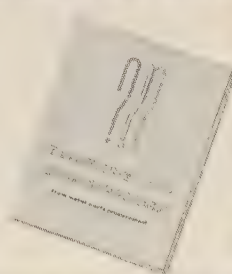
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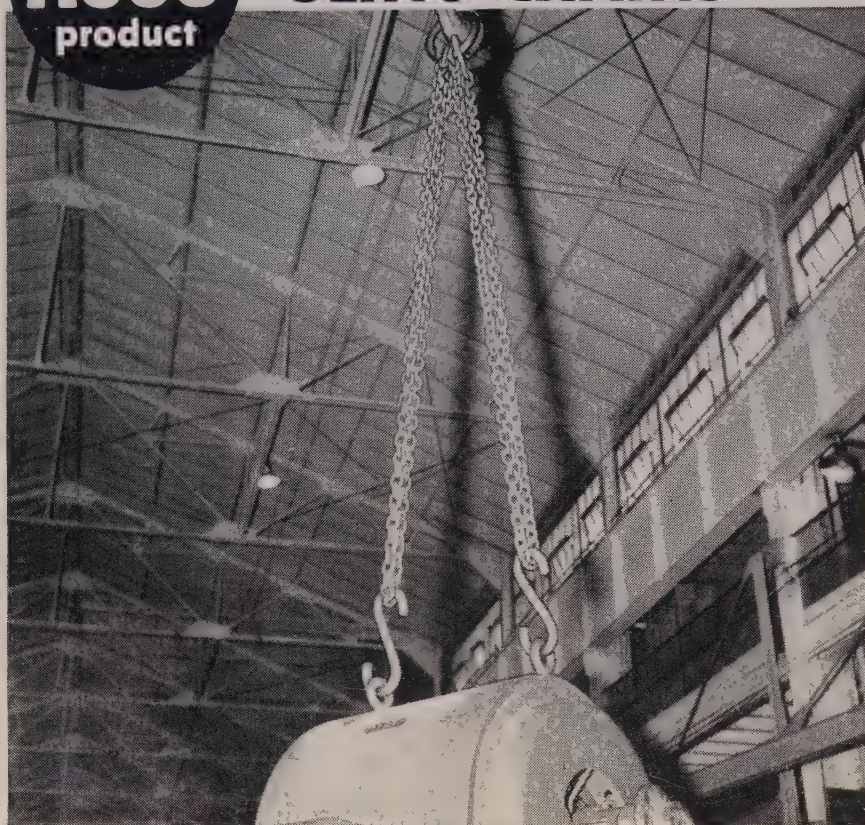
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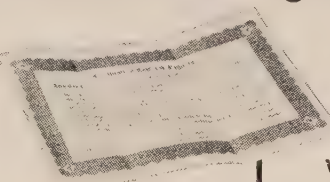


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Rings
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ing added to the active list. The Chester, Pa., stack is being banked temporarily; the producer is drawing on stocks.

A shipment of about 500 tons of Spanish pig iron arrived in this country recently. The tonnage applies against old orders.

Hanna Furnace Corp. is introducing to the 10-lb pig iron users an improved iron ingot. Both the traditional-sized pig and the new 10-lb ingot will be produced in all merchant grades. The new ingot is a flat, rather than a trapezoid, shape, measuring only 1 3/8-in. thick, 6 1/2-in. long and 5 3/4-in. wide.

Rails, Cars . . .

Track Material Prices, Page 131

Domestic freight car order backlogs are inching upward, involving 18,663 units as of Mar. 1 against 18,395 on Feb. 1. Orders in February amounted to 2690 freight cars, with deliveries totaling 2422, compared with 2008 in January and 3974 in February last year.

Iron Ore . . .

Iron Ore Prices, Page 143

Consumption of Lake Superior iron ore totaled 6,446,914 gross tons in February, reports the Lake Superior Iron Ore Association. Because of fewer days, use fell slightly under that of January when 6,619,820 tons were consumed. It bettered consumption in February of last year, which was 5,786,725 tons, but fell under that of February, 1953 when 7,395,994 tons were consumed.

Stocks at furnaces and on Lake Erie docks on Mar. 1 amounted to 31,108,479 gross tons. This compares with 37,470,406 on Feb. 1; 36,385,842 on Mar. 1, 1954; and 29,948,749 on the same date in 1953.

A total of 176 stacks were in blast on Mar. 1, 167 in this country and 9 in Canada. This was an increase of nine since Feb. 1. Only 29 blast furnaces were idle at the beginning of March, against 38 on Feb. 1, 57 a year ago and 11 two years ago.

Warehouse . . .

Warehouse Prices, Page 132

It looks like warehouse order volume in March will be the best entertained this year, or even a longer period in some cases. In any event, distributors generally report the month's business above that of the previous. In the East sales are about 10 per cent higher than those in the fourth quarter. In fact, January-March was the best three months in more than a year for most sellers.



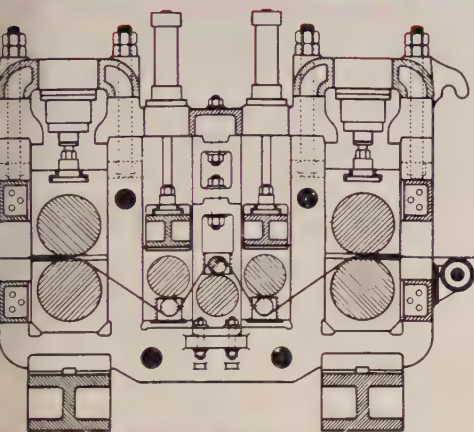
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Features—

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▶ Pull-Thru Type
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▶ Single Cycle Up-Cut Shears.

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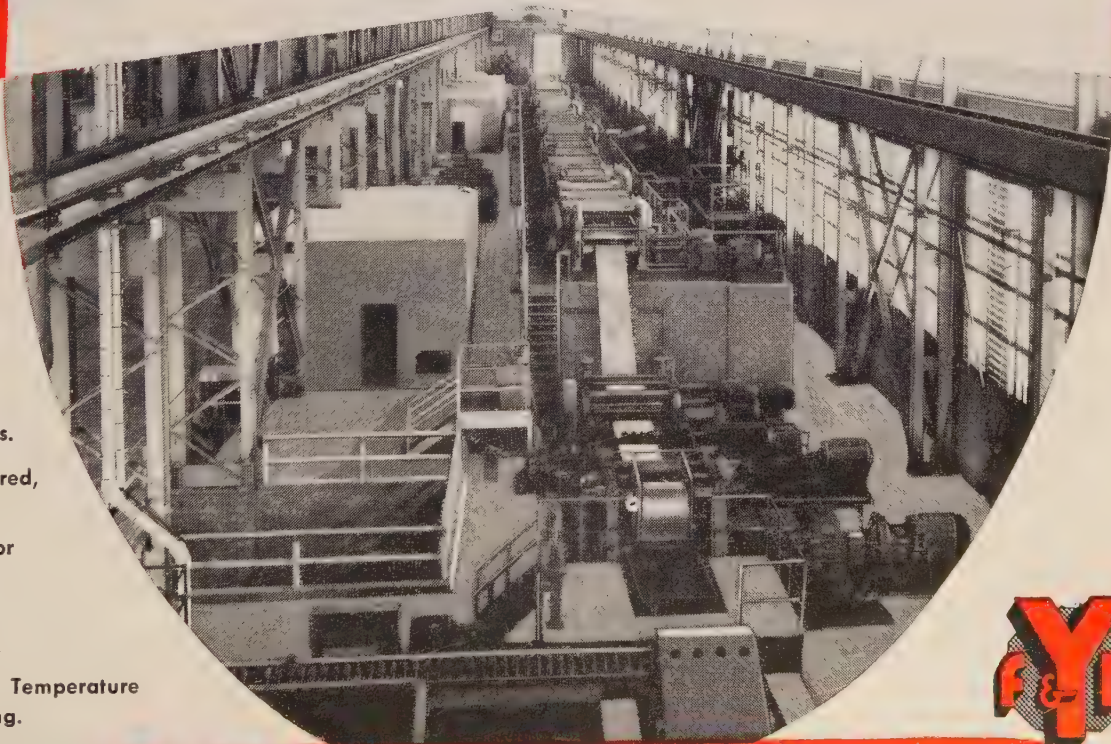
▶ Magnetic Loop Control for
Acid Tanks.

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▶ Automatic Control for Temperature
and Acid Proportioning.

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Cutting or Balling

▶ Up-Coiler with Strip
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MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton \$86, Palmerton, Pa.; \$87 Clairton and Duquesne, Pa.
(16 to 19% Mn) \$84 per ton, Palmerton, Pa.; \$85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton \$190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract \$2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump \$198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add \$2.60 for each 1% above 81%; subtract \$2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 76% C—max 7% Si. Special Grade: (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Madium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 85-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.85c, less ton 13.85c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots \$1.35, less ton \$1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract \$177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract \$195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload \$1.16, ton lots \$1.18; less ton \$1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovandium: Open-hearth. Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, \$3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max). \$3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max C 0.20% max) \$3.20.

Grainal: Vanadium Grainal No. 1, \$1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots \$1.28 per lb contained V₂O₅, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy. Less than 100 lb \$1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si). \$5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Del. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3 1/2 lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Del. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3 1/2 lb and containing exactly 2 lb of Mn and approx. 1/2 lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2 1/2 lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdenic-Oxide Briquets: (Containing 2 1/2 lb of Mo each) \$1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more \$3.80 per lb of contained W; 2000 lb W to 5000 lb W, \$3.90; less than 2000 lb W, \$4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, \$12 per lb of contained Cb, less ton \$12.05. Delivered. Spot, add 10c.

Ferrotantalum-Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, \$6.25 per lb of contained Cb plus Ta, del.; less ton lots \$6.30.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, 1/2" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Del. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of \$4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., \$1.46 in all sizes except powdered which is \$1.57; Washington, Pa., furnace, any quantity, \$1.46.

Technical Molybdenic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., \$1.25 in cans; in bags, \$1.24, f.o.b. Langeloth, Pa.; Washington Pa., \$1.24.

ALLOY STEELS PAY OFF

CASE HISTORIES INDEX

CASE HISTORY NO.	PART	CASE HISTORY NO.	PART
1	AD VALVE STEMS AND COIL WINDINGS	31	HOLLOW DRILL ROD
2	ANCHOR CHAIN	32	HORSESHOE CARS
3	ANNEALING BELT	33	HOT WATER TANKS
4	BALL COILS	34	HYDRAULIC TURBINES
5	BAND SAWS	35	INDUSTRIAL BOOPS
6	BOLTS	36	INDUSTRIAL SCREENS
7	BOMBING AIDS	37	INDUSTRIAL UNIVERSAL JOINTS
8	BRIDGES	38	IN-THE-HEAD CUTTING AND FORGING MACHINES
9	BURNING OIL PASSENGER CARS	39	IRON-ROD-DRIVEN PILES
10	CABLE TOOLS AND CONDUIT BITS	40	IRON CASE AND ONE-PIECE
11	CAUSTIC EVAPORATORS	41	CRANE HEADS
12	CENTRAL STATION PUMP PUMPS	42	ONE-PIECE COIL CHUTES
13	CHAIN PINS IN STEEL MECHANISMS	43	ONE-PIECE SCRAPERS
14	CHIPPERS AND LOG SKIDERS	44	OVERHEAD TRAVELING CRANES
15	CHRISTMAS TREES	45	PITMAN CARS
16	CLUTCH SPRINGS	46	ROLL-ON HARDWARE
17	COAL CUTTER SAWS	47	POWER SHOVELS
18	COLLAPSIBLE HOSES	48	PRESSURE VESSELS
19	COMBUSTION CHAMBERS ON DIESEL-DRIVEN PLANT HEATERS	49	RAILROAD PARTS AND TRUCKS
20	COMPRESSED GAS CYLINDERS	50	RIVET MTS.
21	CONVEYORS	51	ROLL ROLLERS IN STEEL INDUSTRIES
22	CULTIVATORS	52	SAWS
23	DRAW RINGS	53	SLURRY ROLL-ALICES
24	EQUIPMENT IN CONTACT WITH FRESHWATER	54	SLING CHAINS
25	FRESHWATER HEATERS	55	STEEL MILL EQUIPMENT
26	FENCING	56	STEERING GEAR
27	FOAM TIRE AND OIL CHARGES AND EXTINGUISHERS	57	TRANSFORMER SHELLS
28	FOOD HANDLING EQUIPMENT	58	TRUCKER BLADES
29	GROUNDING BALLS	59	TRUCKS, RAILROADS, ROLLERS AND TRUCKS
30	HAND SHOVELS	60	UNIVERSAL WIRE CARRIERS AND STOCK RAILS

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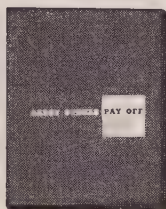
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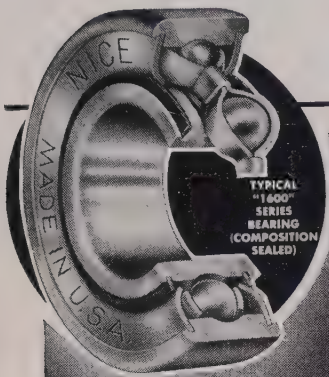
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Old range bessemer	10.40
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Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.
Foundry and basic 52-62% concentrates
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Cents per unit, c.i.f. Atlantic ports
Swedish basic, 60-68% 20.00
N. African hematite (spot) nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot) 24.00-26.00

Tungsten Ore

Net ton unit, before duty
Foreign, wolframite, good commercial
quality 25.00-26.00
Domestic, scheelite, mine 63.00

Manganese Ore

Mn 48%, nearby, 85c-87c per long ton unit
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46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean
freight differential for delivery to Portland,
Oreg., or Tacoma, Wash.

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48% 2.8:1 nom. 40.00-42.00
48% 3:1 42.00-44.00
48% no ratio 32.00-34.00

South African Transvaal

44% no ratio 19.00-20.00
48% no ratio 31.00-32.00

Domestic

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Antimony Ore

Per unit of Sb content, c.i.f. seaboard
50-60% 3.25-3.80
65% 4.15-4.25

Vanadium Ore

Cents per lb, V₂O₅ content, deld. mills
Domestic 31.00

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Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., \$94; Ashland, Grahn, Hayward, Haldichs, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., \$114; Salina, Pa., \$119; Niles, O., \$125; Los Angeles, Pittsburg, Calif., \$137.20.

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Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., \$120; Warren, Niles, O., Hays, Pa., \$125; Morrisville, Pa., \$123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., \$130; Cutler, Utah, \$121.55; Los Angeles, \$127.85.
Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., \$137; Morrisville, Pa., Niles, O., \$140; Joliet, Ill., \$143.

Semisilica Brick (per 1000)

Clearfield, Pa., \$130; Woodbridge, N. J., \$114.
Insulating Fire Brick (per 1000)
2300° F.: Massillon, O., \$178.50; Clearfield, Pa., \$213; Augusta, Ga., Beaver Falls, Zellenople, Pa., Mexico, Mo., \$206; Vandalia, Mo., \$214.10; Portsmouth, O., \$207.50; Bessemer, Ala., \$212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., \$64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., \$77.50; Wellsville, O., \$81.50; Clearfield, Pa., Portsmouth, O., \$87; Perla, Ark., \$109; Los Angeles \$110.25; Pittsburg, Calif., \$111.30.

High-Alumina Brick (per 1000)

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., \$181; Danville, Ill., \$169.30.
60 Per Cent: St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., \$225; Danville, Ill., \$213.20.
70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$260; Danville, Ill., \$258; Clearfield, Pa., \$267.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., \$147; Clearfield, Pa., \$148.50; St. Louis, \$159.30; Athens, Tex., \$155.

Nozzles (per 1000)

Reesdale, Pa., \$234.70; Johnstown, Pa.,

\$240.70; Clearfield, Pa., \$241.40; St. Louis, \$259.45; Athens, Tex., \$247.70; Bridgeburg, Pa., \$267.50.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., \$183.50; Clearfield, Pa., \$185.50; St. Louis, \$195.80; Athens, Tex., \$191.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettaville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., \$14.50; Thornton, McCook, Ill., \$15.10; Dolly Siding, Bonne Terre, Mo., \$13.65.

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Toluol, one deg. 32.00-35.00
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Per ton, bulk, ovens

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Threaded with nipple, unboxed, f.o.b. plant

GRAPHITE		Per
Diam	Length	100 lb
2	24	\$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5½	40	25.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25
CARBON		
8	60	11.40
14, 12, 10	60	11.10
14	72	10.25
16	60	10.25
17	72	9.85
20	84	9.85
20	90	9.65
24	72, 84	9.85
24	96	9.60
30	84	9.75
40, 35	110	9.50
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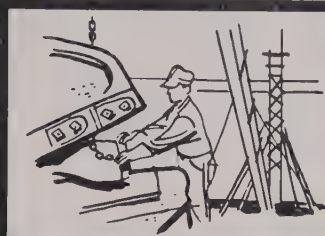
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CLEVELAND, OHIO
DETROIT, MICHIGAN
HOUSTON, TEXAS
LEBANON, PENNA.
MONTREAL, CANADA
LOS ANGELES, CAL.
NEW YORK, N. Y.
PITTSBURGH, PENNA.
PUEBLO, COLORADO

READING, PENNA.
ST. LOUIS, MISSOURI
SAN FRANCISCO, CAL.
SEATTLE, WASH.

IMPORT & EXPORT — **LIVINGSTON & SOUTHARD, INC.**, 99 Park Ave., New York, N. Y. • Cable Address: **FORENTRACO**

Scrap . . .

Scrap Prices, Page 146

Chicago—The scrap market here shows further, if somewhat uncertain, strength. No. 1 heavy melting industrial scrap, No. 1 dealer bundles, No. 1 railroad heavy melting and re-rolling rails have advanced \$1 a ton. Buying by mills fails to measure up to the current operating rate of 98.5 per cent of ingot capacity—tonnage-wise, an all-time record output in the Chicago district. Dealer material, particularly No. 2 bundles, are in slow demand. Some grades are stronger by \$1 a ton, reflecting improvement in gray iron foundry operations.

Trading in futures contracts for steel scrap will resume Apr. 18 on the Chicago Mercantile Exchange. Delivery months for the new contracts will be September and November, 1955. The original contracts, opened last September, expired in January and March. The new contracts will incorporate some changes in specifications.

Pittsburgh—Turnings and borings continue their price advance of the past month, but there's no change in quotations on heavy melting scrap. The market has leveled off, although demand is firm. Mills are reluctant to pay above prevailing prices in present circumstances.

Cleveland—The scrap market here is quiet, with prices unchanged at recently established levels. Except for a few small purchases in the Valley, trading has been devoid of activity the past week or so. Material continues to move steadily on contracts. March automotive lists, scheduled to come out before end of the month, may show a more definite market trend.

A vigorous campaign to improve the quality of No. 2 hydraulic compressed bundles, the largest individual tonnage produced in dealers' yards, is being pressed by the Northern Ohio chapter of the Institute of Scrap Iron & Steel Inc. Posters are being distributed to truckers of bundling material informing them that porcelain, tin cans, terne plate, tin plate, metal-coated material, wood, rubber, concrete, and nonmetallics are not acceptable as No. 2 sheet iron. The co-operation of auto wreckers is sought.

Philadelphia — Steel scrap supply is slightly on the easy side. More tonnage is coming out. Most leading consumers are not pressing for material.

Prices on No. 1 heavy melting, No. 1 bundles and No. 1 busheling are a shade easier at \$38.50-\$39, delivered, and No. 2 bundles at \$30-\$31. Other steel grades are holding. Low phos

structural and plate scrap is moving sluggishly, but at last week's prices. Heavy breakable is a shade higher around \$39, delivered.

Export buying is being sustained. Orders are being entered for April. The government may limit the quality of scrap exported, but not the quantity. Clarification is expected shortly.

New York—Demand for stainless steel scrap is the most active in months. Orders are coming in from as far west as Cleveland and Detroit. Brokers' buying prices on 18-8 sheets, clips and solids have jumped to \$200-\$210, on borings and turnings, to \$95-\$100. Straight chrome grades are in less demand, but prices on these also have advanced substantially. Brokers are paying \$75-\$80 for type-430 sheets, clips and solids and \$65-\$75 for type-410 material.

Prices on the major steel and cast grades are unchanged, with the market undertone strong. Considerable steel scrap is moving into eastern Pennsylvania and for export to Europe.

Buffalo—Despite a heavy ice jam at the water front here, early opening of the lake navigation season is expected. This may become a factor in the local scrap market. Meanwhile, prices hold steady as dealers ship

fair tonnages against old orders.

Cincinnati—No. 1 open-hearth grades of scrap have become stabilized at \$33-\$34, which is \$1.50 a ton above the previous market level. The increase reflects substantial local buying. Demand for cast and railroad scrap is quiet.

Detroit—The scrap market is quiet here with prices firm. No change in the market is anticipated until automotive lists are closed at the end of this month.

Boston—The recent upward rise in steel prices appears temporarily checked. Some recession in No. 2 heavy melting is reported, with prices off \$1 to \$1.50 a ton. Shipments against old orders are generally completed and new buying is hesitant. There are large stocks of No. 2 bundles and substantial tonnage of the lighter grades at some yards.

St. Louis—Undertone of the scrap market is firmer. This, however, is not reflected in quotations, with mill stocks adequate. Once-active railroad grades continue in slack demand. Cast items are steady.

Los Angeles—With one large scrap consumer currently out of the market, dealers report some uncertainty in prices. Offshore material, primarily

(Please turn to page 148)

SELECT A Sterling THAT FITS YOUR JOB!



TUBULAR STEEL FRAME

(Above)
Model D31/2S Maximum Capacity 3 1/2 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.



12 SPOKE STEEL WHEEL



PNEUMATIC TIRED WHEEL

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WOOD HANDLE BARROW

DEALERS: Want to sell quality wheelbarrows? You can on our non-exclusive basis. Write for details.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling WHEELBARROWS



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STERLING Quality



Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Mar. 23	\$37.75
Mar. 16	37.50
Feb. Avg.	36.79
Mar. 1954	24.37
Mar. 1950	28.23

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)	
No. 1 heavy melting...	38.00-39.00
No. 2 heavy melting...	35.00-36.00
No. 1 bundles	38.00-39.00
No. 2 bundles	30.00-31.00
No. 1 busheling	38.00-39.00
Machine shop turnings ..	22.00-23.00
Mixed borings, turnings ..	22.00-23.00
Short shovel turnings ..	26.00-27.00
Cast iron borings	26.00-27.00
Cut structural, 5 ft lengths	41.00-42.00
Heavy turnings	35.00-36.00
Punchings & plate scrap ..	42.00-43.00
Electric furnace bundles ..	39.00-40.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Charging box cast	32.00-33.00
Heavy breakable cast..	32.00-33.00
Unstripped motor blocks ..	22.00-23.00
No. 1 machinery cast..	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt..	40.00-41.00
Rails, 2-ft and under..	50.00-51.00
Rails, 18-in. and under..	51.00-52.00
Rails, random lengths..	46.00-47.00
Railroad specialties ..	44.50-45.50

Stainless Steel Scrap

18-8 bundles & solids ..	210.00-220.00
18-8 turnings	105.00-110.00
430 bundles & solids ..	95.00-100.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumer plant)	
No. 1 heavy melting...	34.00-36.00
No. 2 heavy melting...	31.00-32.00
No. 1 bundles	34.00-36.00
No. 2 bundles	28.00-29.00
No. 1 busheling	34.00-36.00
Machine shop turnings ..	17.00-18.00
Mixed borings, turnings ..	24.00-25.00
Short shovel turnings ..	24.00-25.00
Cast iron borings	24.00-25.00
Low phos.	34.00-36.00
Cut structural plate 2 ft and under	42.00-43.00
Alloy free, short shovel turnings	26.50-27.50
Electric furnace bundles ..	34.00-36.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Charging box cast	37.00-38.00
Stove plate	42.00-43.00
Heavy breakable cast..	34.00-35.00
Unstripped motor blocks ..	29.00-30.00
Brake shoes	32.00-33.00
Clean auto cast	46.00-47.00
No. 1 wheels	43.00-44.00
Burnt cast	33.00-34.00
Drop broken machinery ..	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt..	37.00-38.00
R.R. malleable	50.00-46.00
Rails, 2-ft and under..	50.00-51.00
Rails, 18-in. and under..	51.00-52.00
Rails, random lengths..	45.00-46.00
Cast steel	39.00-40.00
Railroad specialties ..	39.00-40.00
Uncut tires	41.00-42.00
Angles, splice bars ..	46.00-47.00
Rails, rerolling	52.00-53.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)	
18-8 bundles, solids ..	190.00-200.00
18-8 turnings	80.00-90.00
430 clips, bundles, solids	80.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)	
No. 1 heavy melting...	37.00-38.00
No. 2 heavy melting...	32.00-33.00
No. 1 bundles	37.00-38.00
No. 2 bundles	27.50-28.50
No. 1 busheling	37.00-38.00
Machine shop turnings ..	18.00-19.00
Short shovel turnings ..	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	37.00-38.00
Electric furnace bundles ..	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt..	38.00-39.00
-------------------------	-------------

CHICAGO

No. 1 heavy melting...	35.00-37.00
No. 2 heavy melting...	32.00-33.00
No. 1 factory bundles ..	36.00-37.00
No. 1 dealer bundles ..	35.00-36.00
No. 2 bundles	24.00-25.00
No. 1 busheling	35.00-37.00
Machine shop turnings ..	17.00-18.00
Mixed borings, turnings ..	19.00-20.00
Short shovel turnings ..	19.00-20.00
Cast iron borings	19.00-20.00
Cut structural, 3 ft ..	36.00-37.00
Punchings & plate scrap ..	38.00-39.00
Electric furnace bundles ..	36.00-37.00

Cast Iron Grades

No. 1 cupola	39.00-41.00
Stove plate	36.00-37.00
Unstripped motor blocks ..	28.00-29.00
Clean auto cast	46.00-47.00
Drop broken machinery ..	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt..	38.00-39.00
R.R. malleable	44.00-45.00
Rails, 2-ft and under..	47.00-48.00
Rails, 18-in. and under..	48.00-49.00
Angles, splice bars ..	43.00-44.00
Rails, rerolling	50.00-51.00

Stainless Steel Scrap

18-8 bundles & solids ..	205.00-210.00
18-8 turnings	95.00-100.00
430 bundles & solids ..	85.00-90.00
430 turnings	45.00-50.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting...	28.50
No. 2 heavy melting...	22.00
No. 1 bundles	29.00
No. 2 bundles	21.00
No. 1 busheling	28.00
Machine shop turnings ..	13.00
Mixed borings, turnings ..	13.00
Short shovel turnings ..	17.00
Punchings & plate scrap ..	30.00

Cast Iron Grades

Charging box cast	27.00
No. 1 cupola	34.00
Stove plate	30.00
Heavy breakable	25.00
Unstripped motor blocks ..	20.00
Clean auto cast	38.00
Malleable	30.00

BIRMINGHAM

No. 1 heavy melting...	32.00-33.00
No. 2 heavy melting...	27.00-28.00
No. 1 bundles	32.00-33.00
No. 2 bundles	23.00-24.00
No. 1 busheling	32.00-33.00
Cast iron borings	17.00-18.00
Short shovel turnings ..	25.00-26.00
Machine shop turnings ..	18.00-19.00
Electric furnace bundles ..	32.00-33.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate ..	36.00-37.00
Structural plate, 2 ft ..	36.00-37.00
Unstripped motor blocks ..	35.50-36.50

Railroad Scrap

No. 1 R.R. heavy melt..	36.00-37.00
Rails, 18 in. and under..	43.50-44.50
Rails, rerolling	43.00-44.00
Rails, random lengths..	39.00-40.00
Angles, splice bars ..	40.00-41.00
Stand. steel axles	35.00-36.00

PHILADELPHIA

(Delivered consumer plant)	
No. 1 heavy melting...	38.50-39.00
No. 2 heavy melting...	35.00
No. 1 bundles	38.50-39.00
No. 2 bundles	30.00-31.00
No. 1 busheling	38.50-39.00
Electric furnace bundles ..	41.00
Machine shop turnings ..	22.50
Mixed borings, turnings ..	22.00
Short shovel turnings ..	25.50
Structurals & plate	42.00-43.00
Heavy turnings	34.00-35.00
Couplers, springs, wheels ..	42.50
Rail crops, 2 ft & under ..	52.00-53.00

Cast Iron Grades

No. 1 cupola	38.00
Malleable	44.00
Heavy breakable cast..	39.00
Drop broken machinery ..	44.00

NEW YORK

(Brokers' buying prices)	
No. 1 heavy melting...	32.50-33.00
No. 2 heavy melting...	30.00-31.00
No. 1 bundles	32.50-33.00
No. 2 bundles	24.00-25.00
Machine shop turnings ..	14.00-15.00
Mixed borings, short turnings	15.00-16.00
Short shovel turnings ..	16.00-17.00
Low phos. (structural & plate)	35.00-36.00

Cast Iron Grades

No. 1 cupola	30.00-31.00
Unstripped motor blocks ..	22.00-23.00
Heavy breakable	31.00-32.00

Stainless Steel

18-8 sheets, clips, solids	200.00-210.00
18-8 borings, turnings ..	95.00-100.00
430 sheets, clips, solids..	75.00-80.00
410 sheets, clips, solids..	65.00-75.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting...	29.50-30.00
No. 2 heavy melting...	25.00-25.50
No. 1 bundles	29.50-30.00
No. 2 bundles	22.00-23.00
Mixed borings, turnings ..	14.50-15.00
Short shovel turnings ..	15.50-16.00
No. 1 cast	30.00-31.00
Mixed cupola cast	28.00-29.00
No. 1 machinery cast..	33.00-34.00

BUFFALO

No. 1 heavy melting...	32.00-33.00
No. 2 heavy melting...	29.00-30.00
No. 1 bundles	32.00-33.00
No. 2 bundles	27.00-28.00
No. 1 busheling	32.00-33.00
Machine shop turnings ..	20.50-21.50
Short shovel turnings ..	23.00-24.00
Cast iron borings	22.00-23.00
Low phos.	36.00-37.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	37.00-38.00
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths..	35.00-36.00
Rails, 3 ft and under..	42.00-43.00
Railroad specialties ..	36.50-37.50

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)	
No. 1 heavy melting...	33.00-34.00
No. 2 heavy melting...	29.50-30.50
No. 1 bundles	33.00-34.00
No. 2 bundles	24.00-25.00
No. 1 busheling	33.00-34.00
Machine shop turnings ..	19.00-20.00
Mixed borings, turnings ..	19.00-20.50
Short shovel turnings ..	22.00-23.00
Cast iron borings	20.00-21.00
Low phos. 18-in.	38.00-39.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Heavy breakable cast..	35.00
Charging box cast	36.00
Drop broken machinery ..	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt..	35.00-36.00
Rails, 18-in. and under..	47.00-48.00
Rails, random lengths..	41.50-42.50

ST. LOUIS

(Brokers' buying prices)	
No. 1 heavy melting...	31.00
No. 2 heavy melting...	29.00
No. 1 bundles	31.00
No. 2 bundles	24.50
Machine shop turnings ..	15.00
Short shovel turnings ..	17.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	32.50
Heavy breakable cast..	32.50
Unstripped motor blocks ..	32.50
Brake shoes	32.00
Clean auto cast	42.50
Stove plate	36.50

Railroad Scrap

No. 1 R.R. heavy melt..	35.50
Rails, 18-in. and under ..	46.00
Rails, random lengths..	40.00-41.00
Rails, rerolling	46.00
Angles, splice bars	41.00

SEATTLE

(Delivered consumer plant)	
No. 1 heavy melting...	31.00
No. 2 heavy melting...	27.00
No. 1 bundles	22.50
No. 2 bundles	20.00
No. 3 bundles	14.00
Machine shop turnings ..	12.00-14.00
Mixed borings, turnings ..	12.00-14.00
Short shovel turnings ..	12.00-14.00
Electric furnace, No. 1 ..	35.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	35.00-38.00
Heavy breakable cast..	23.00
Unstripped motor blocks ..	27.00
No. 1 wheels	21.00
Stove plate (f.o.b. plant) ..	28.00-29.00
Brake shoes	28.00-29.00
Railroad Scrap	
(Delivered consumer plant)	
Rails, random lengths..	30.00-34.00

LOS ANGELES

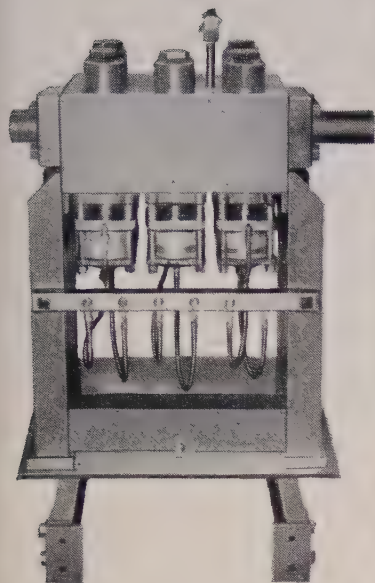
No. 1 heavy melting...	28.00
No. 2 heavy melting...	24.00
No. 1 bundles	27.00
No. 2 bundles	22.00
Machine shop turnings ..	8.00
Cast Iron Grades	
(F.o.b. shipping point)	
No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting...	27.00
No. 2 heavy melting...	25.00
No. 1 bundles	26.00
No. 2 bundles	22.00
No. 1 busheling	27.00
Machine shop turnings ..	8.00
Mixed borings, turnings ..	8.00
Short shovel turnings ..	10.00
Cut iron borings	10.00
Cut structurals	27.00
Heavy turnings	9.00
Punchings & plate scrap ..	27.00

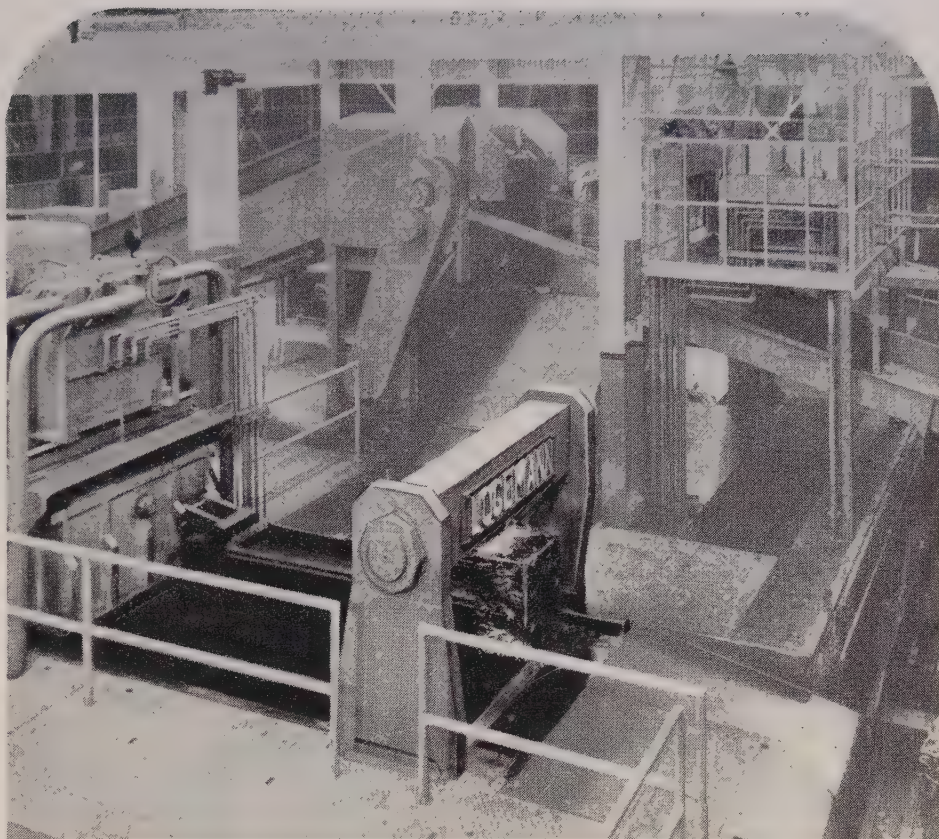
Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast..	36.00
Unstripped motor blocks ..	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery ..	46.00



LOGEMANN HYDRAULIC OPERATING VALVE

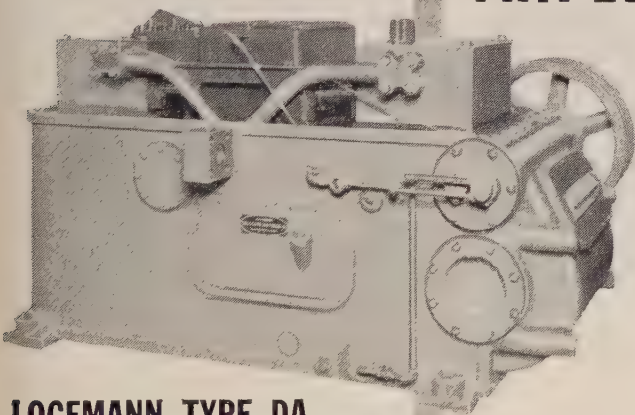
This compact valve was designed to control the movements of the hydraulic rams in large scrap presses but can be modified to suit similar operations on other hydraulic equipment. Interested parties will please outline the nature of the service, operating sequence, gallonage and pressure requirements.



Get low cost, high density bales with LOGEMANN SELF-CONTAINED TRIPLE-COMPRESSION PRESSES

The illustration shows one of two large scrap-press units in a modern automotive plant. Over a period of many years, such units have baled sheet scrap skeletons and trim from metal operations in large industrial plants throughout the country, forming the scrap into high-density bales for re-melting in steel mills. Low baling costs are the result of correct design for heavy duty service, minimum maintenance and operating interruptions, as well as simplicity, accessibility and safety features.

Pioneers in the metal baling field, LOGEMANN engineers embodied in the design those features that have proven dependable over an extended period of years. Some installations in service over 35 years are still operating economically.



LOGEMANN TYPE DA DOUBLE PRESSURE PUMPS

These compact and efficient opposed-cylinder reciprocating-plunger pumps for low and high pressure service lend themselves to a wide range of double pressure applications. They are close-coupled, reliable, and capable of delivering high gallonage, at low and high pressures, at low power costs.

Tell Us the nature of your scrap!

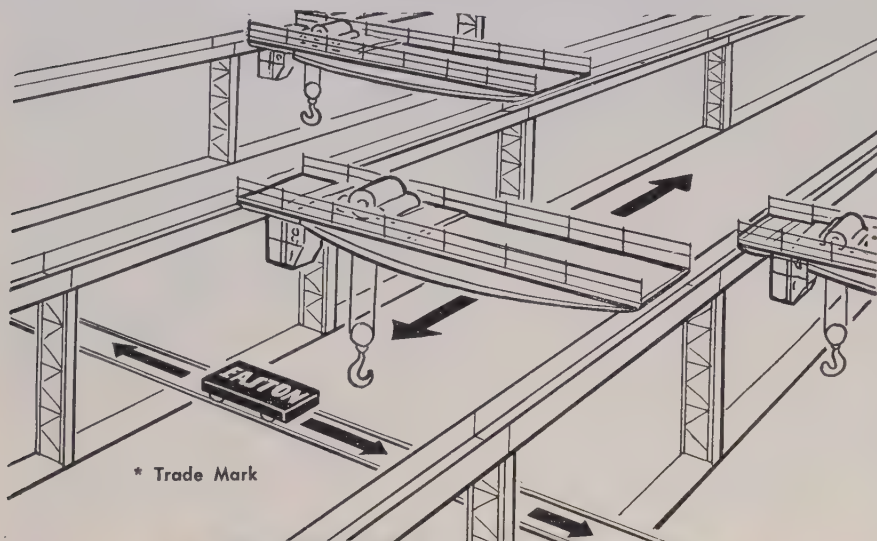
LOGEMANN press sizes are not confined to the large models. Producers of sheet scrap—steel, copper, brass, or aluminum—are invited to submit their scrap baling problems regardless of tonnage. Please state the character of the metal, minimum tonnage to be handled in a given period of hours, range of gauges and, where possible, indicate maximum and minimum lengths and widths of pieces. Experienced sales engineers are available for discussion of your conditions and requirements.

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Automatic motor-driven transfer cars provide a universal handling system in modern parallel bay plants now served by overhead cranes. Also for transfer between plant buildings.



* Trade Mark

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A-1041

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

(Concluded from page 145)

ily secondary grades, is disturbing the market.

San Francisco—Considerable steel scrap is coming into the local market, encouraged by higher prices and increased export demand. Mill requirements lag.

Seattle — Larger scrap consumers hold sizable inventories and are not actively buying. Exports help to maintain local prices at \$31 and \$27, respectively, for No. 1 and No. 2 heavy melting. Cast grades are firm.

The Puget Sound Navy Yard will receive quarterly bids about Apr. 1 on 2000 tons of unprepared scrap and 600 tons of shearings and punchings.

Two foreign vessels were chartered to take scrap from California to Japan, May loading at \$137,000 and \$132,000, respectively. These figures indicate delivered cost, exclusive of loading and discharge, will approximate at least \$15 a ton.

Wire . . .

Wire Prices, Pages 130 & 131

Business in merchant and manufacturers wire is stepping up, especially in the merchant grades. This reflects seasonal improvement in agricultural areas.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

19,800 tons, structural steel sections, Patapsco tunnel, Baltimore; reported placed with the New York Shipbuilding Corp., Camden, N. J.

4400 tons, sheet and H-piling, for ocean terminal, Seward, Alaska; to Columbia-Geneva Steel Division, U. S. Steel Corp., San Francisco.

3000 tons, transmission towers, Bonneville Power Administration, Portland, Oreg., to Bethlehem Pacific Coast Steel Corp., San Francisco.

1360 tons, power plant, Rochester Power & Light Co., Rochester, N. Y., to Belmont Iron Works, Eddystone, Pa.

1200 tons, Gunther Brewery, Baltimore, to Belmont Iron Works, Eddystone, Pa.

1200 tons, Navy requirements for shipment outside this country, to Belmont Iron Works, Eddystone, Pa.

600 tons, approach work, P-5, for Philadelphia-Gloucester bridge, Delaware River Port Authority, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

400 tons, home office building, Western Life Insurance Co., Helena, Mont., to American Bridge Division, U. S. Steel Corp., Portland, Oreg.

350 tons, including bars, office building addition, Deposit Guaranty Bank, Jackson, Miss., to City Steel Co. Inc., Jackson; Farnsworth & Chambers, Houston, Tex., general contractors.

350 tons, medical school building, University of Florida, Gainesville, Fla., to Aetna Steel Co., Jacksonville, Fla.; Arnold Construction Co., Palm Beach, Fla., general contractor.

300 tons or more, bridge steel for Alaska to various fabricators in small lots, by General Services, Seattle.

300 tons, high school, Westwood, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Wexler Construction Co., Newton, Mass., general contractor.

STRUCTURAL STEEL PENDING

6000 tons, bridges, Hammond, Ind., Indiana Toll Road Commission; bids Apr. 6, Indianapolis.

3800 tons, Sheraton Hotel, Pennsylvania

**Cut
STAINLESS
STEEL
buying
costs!**

**SPECIFY
MicroRold®
SHEETS ROLLED
TO THE LIGHT SIDE
OF THE GAUGE RANGE**

Washington Steel's production methods provide new economies in the purchase of stainless sheet. The controlled accuracy of gauge in the rolling process gives you more area per ton or the equivalent area with lesser weight. This close adherence to specified gauge also results in longer die life.

**Washington Steel
CORPORATION
WASHINGTON, PENNSYLVANIA**



Your steel warehouse distributor will gladly tell you the MicroRold Story.

boulevard between 17th and 18th streets, Philadelphia; action expected shortly.

3500 tons, fabricated structural steel and rails, towers, guides, sills and dogs, spillway gates, Long Sault dam, St. Lawrence power project; bids Mar. 31, New York State Power Authority, New York.

1815 tons, 11 bridges, Massachusetts turnpike, Framingham-Natick-Wayland, Mass.; J. F. White Construction Co., Cambridge, Mass., low on general contract.

850 tons, two overhead and two underpass bridges on steel stringers and girders, Northeast expressway, Chelsea-Rever, Mass.; bids Mar. 29, State Department of Public Works, Boston; contract 3; also 195 tons, steel sheet piling.

645 tons, angles and channels, Navy, two lots; bids Apr. 5, General Stores Supply Office, Philadelphia.

350 tons, three bridges, Massachusetts turnpike, Brimfield-Warren, Mass.; A. J. Orlando Construction Co., Whitestone, N. Y., low on general contract.

165 tons, seawall, Hampton, N. H.; also 2120 tons steel sheet piling; Northern Construction Co., Lawrence, Mass., low on general contract.

123 tons, Garden state parkway, contract No. 221, section 3, Essex county, N. J., bids Apr. 7.

120 tons, maintenance shops, Ladd Air Field, Alaska; general contract placed.

105 tons, plain material, state bridge work, Bradford county, Pa.; bids Apr. 15.

REINFORCING BARS . . .

REINFORCING BARS PLACED

500 tons (including structural) dormitories, state hospital, Goldsboro, N. C., to Hall-Hodges Co., Norfolk, Va. (bars) and Dewey Bros. Inc., Goldsboro (structurals); T. A. Loving & Co., Goldsboro, general contractor.

500 tons, Manham dam, Holyoke, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Daniel O'Connell's Sons Inc., Holyoke, general contractor.

100 tons, ammonia plant, Northern Chemical Co., Searsport, Me., to Bancroft & Martin Rolling Mills Co., South Portland, Me.; Girdler Co., Louisville, Ky., general contractor; 85 tons of fabricated structurals to Belmont Iron Works, Philadelphia; only part of structural requirements placed at this time.

100 tons, high school, Westwood, Mass., to Northern Steel Inc., Medford, Mass.; Wexler Construction Co., Newton, Mass., general contractor.

REINFORCING BARS PENDING

1335 tons, bridges, Hammond, Ind., Indiana Toll Road Commission; bids Apr. 6, Indianapolis; also 32,500 linear feet of steel piling.

1165 tons, 11 bridges, Massachusetts turnpike, Framingham-Natick-Wayland, Mass.; J. F. White Construction Co., Cambridge, Mass., low on general contract; also 55 tons, sheet piling, and 38,320 linear feet of steel piles.

450 tons, state turnpike tunnel, Lehigh-Northampton counties, Pa.

360 tons, ferry wharf and slip, Glass House Point, Va.; bids Apr. 6, Bureau of Public Roads, Arlington, Va.

290 tons, three bridges and culvert, Massachusetts turnpike, Brimfield-Warren, Mass.; A. J. Orlando Construction Co., Whitestone, N. Y., low on general contract.

240 tons, bars, store, Bonwit-Teller, Jenkintown, Pa.; Wark Co., Philadelphia, general contractor.

114 tons, Washington state bridge, Auburn, Wash.; bids to Olympia, Wash., Mar. 22.

104 tons, state bridge work, Erie county, Pa.; bids Apr. 15.

PLATES . . .

PLATES PLACED

100 tons or more, four cylindrical chemical storage tanks, for J. R. Simplot Co., Pocatello, Idaho, to unstated fabricator.

60 tons, water tank, Kennewick, Wash., to Consolidated Western Steel Corp., Seattle, low at \$18,307.

PLATES PENDING

600 tons, storage fuel installation, Galena, Alaska; bids in Mar. 24.

WANTED DIVISION SALES MANAGER

To head castings sales division of medium-size company making large steel castings. State age, experience and qualifications.

Reply Box 229, STEEL
Penton Building Cleveland 13, Ohio

OVERHEAD TRAVELING CRANE DESIGN ENGINEER

Graduate engineer with substantial experience in design, construction and executive responsibility wanted to assume charge of engineering department in overhead traveling crane manufacturing plant. Give full details of professional and executive experience, salary requirements, etc.

Reply Box 233, STEEL
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For Sale

Used, #401 Air Compressor, 1 Ingersoll Rand Company 14" x 12" Class ERI Belt Driven Air Compressor #55706 26 ft. 14" double leather belt, less motor, with many new spare parts for same which requires slight repairs to bearings. Will sell for best offer. Write DICK BROTHERS, INC., 3rd & Buttonwood Streets, Reading, Pennsylvania.

Because of changes in our plans, we offer to sell brand new, never used, 1-Type 600-OTE, TIMKEN Worm Geared Mixing Ladle mounted on four wheel bearing truck, includes ladle liner #6 Claygraphite liner. Write DICK BROTHERS, INC., 3rd & Buttonwood Streets, Reading, Pennsylvania.

Help Wanted

INDUSTRIAL SALESMAN or SALES TRAINEE, age 25-35, for established supplier furnishing basic raw material to the iron and steel industry. Metallurgical education or knowledge of iron and steel melting essential. Territory—Eastern Pennsylvania, New Jersey and Eastern New York. Prefer applicant now living in this area. Salary commensurate with experience plus expenses. Reply Box 230, Penton Building, Cleveland 13, Ohio, advising previous experience, qualifications and salary expected.

Representatives Wanted

WANTED SALES REPRESENTATIVE with contacts in Central New York State to handle Cast Alloy cutting tools and steel products on a commission basis. Reply Box 234, STEEL, Penton Building, Cleveland 13, Ohio.

Accounts Wanted

ACCOUNT WANTED

Non-conflicting with threaded fastener line handled over five years. Territory Western Ohio and Indiana, Jobbers and Industrials. Mill experience in cold finished steel. Reply Box 236, STEEL, Penton Building, Cleveland 13, Ohio.

Positions Wanted

MANUFACTURING ENGINEER

Twenty-five years experience in manufacturing of sheet metal stampings, tool-die design and construction. Emphasis on high speed production, progressive and deep draws. Reply Box 175, STEEL, Penton Building, Cleveland 13, Ohio.

MECHANICAL ENGINEER, age 40, graduate, 17 years varied staff and supervisory experience general plant engineering, specifications, design, new construction and project engineering seamless and welded tube mills and related facilities. Desires position executive assistant or department head, Midwest or far west preferred. Reply Box 232, STEEL, Penton Building, Cleveland 13, Ohio.

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FLORIDA REPRESENTATION

Established Agent in North will relocate in Florida. Graduate Mechanical Engineer, age 38, married with family. Interested in representing industrial accounts in the State of Florida.

Reply Box 231, STEEL

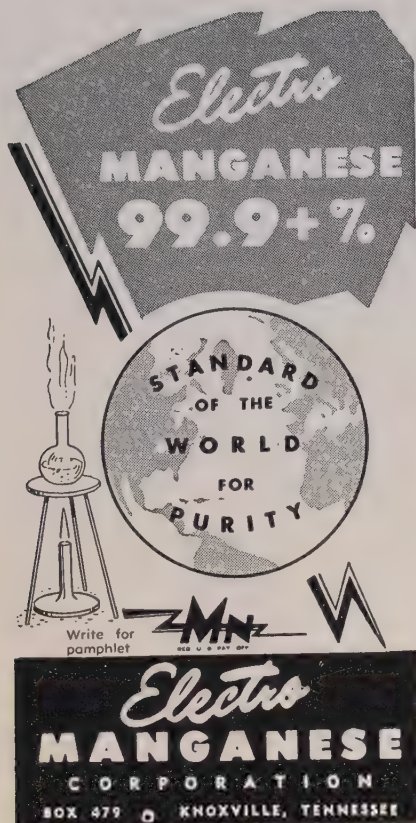
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WANTED DISTRIBUTORS

A well established progressive manufacturer of factory-built electric heat treating furnaces is expanding its line by introducing a new line of patented low-cost, controlled atmosphere furnaces. For nearly 25 years our standard factory-built heat treating furnaces have been used by leading manufacturers in many lines of industry. This new line promises to open up a still larger market. It will be aggressively advertised. Due to revision in sales policy, we are interested in lining up responsible, established distributor representation for the areas of New York City, Chicago, Philadelphia, Buffalo, Pittsburgh, Milwaukee, South Atlantic States, San Francisco, Los Angeles, and Texas. Distributor personnel should be metallurgical engineers or men who are familiar with heat treating equipment and applications. They should be in position and have the ability, to initiate sales as well as follow up leads. In answering, please give complete details of your organization, lines now selling and territory you can effectively cover.

Reply Box 235, STEEL

Penton Building Cleveland 13, Ohio

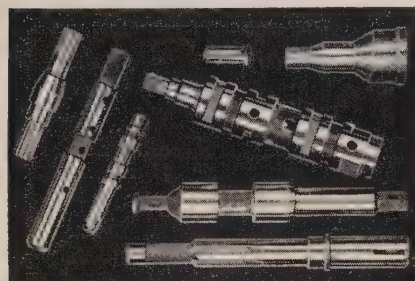


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500 tons, Navy fuel storage project, Adak, Alaska; bids in Mar. 23.

500 tons, estimated, 12 barges, amphibious, re-supply cargo, 60-ton capacity each; bids Apr. 15, Transportation Materiel Command, Marietta, Pa.

450 tons or more, 11,000 feet of 24-in. x 3/4-in. water pipe, Portland, Oreg.; American Pipe & Construction Co., Portland, reported low.

300 tons, 4700 feet, 36-in. x 1/2-in. water pipe, additional contract for Anacortes, Wash., system expansion; bids Apr. 5; Carey & Kramer, Seattle, engineers.

125 tons, hull, medium tensile, galvanized; bids Apr. 13, General Stores Supply Office, Navy, Philadelphia.

125 tons, floor plate, Navy; bids Mar. 31, General Stores Supply Office, Philadelphia.

100 tons, moored mine and antisubmarine weapons tank, Naval Ordnance Laboratory, White Oak, Md.; bids Mar. 30.

PIPE . . .

CAST IRON PIPE PLACED

512 tons, Tacoma, Wash., system expansion, to U. S. Pipe & Foundry Co., Seattle.

419 tons, 6 to 24 in., Puyallup, Wash., system expansion, to Pacific States Cast Iron Pipe Co., Seattle.

317 tons, various sizes, Pasco, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

98 tons, for Lewiston, Idaho, and 86 tons for Medford, Oreg., to Pacific States Cast Iron Pipe Co., Seattle.

CAST IRON PIPE PENDING

2165 tons, 18 to 30 in., water supply project for Hoquiam, Wash.; bids in but steel pipe may be selected; award under study.

500 tons, estimated, housing project, Ft. Lewis, Wash.; J. W. Bateson, Dallas, Tex., general contractor; subcontract to Thorburn & Logozo; type of pipe under study.

200 tons, 8200 feet of 12 and 8 in.; bids to Ruth Wall, clerk, Quincy, Wash., Mar. 21.

150 tons, 4 to 8 in.; bids in at Marysville, Wash., Mar. 21.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Missouri-Kansas-Texas, four diesel locomotives, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Union Pacific, 50 diesel locomotive units, to unnamed builders.

RAILROAD CARS PLACED

American Refrigerator Transit Co., 100 seventy-ton and 40 forty-ton insulated box cars to Pacific Car & Foundry Co.

Chicago & Northwestern, 25 caboose cars, to the Kenton, O., plant of the International Railway Car Co.; previously, this order was erroneously reported as placed by the Chicago & Great Western.

Missouri-Kansas-Texas, 25 gondola cars to the Johnstown, Pa., plant of Bethlehem Steel Co.

North American Car Corp., eight 70-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

Pittsburgh-West Virginia, 50 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

Reserve Mining Co., four caboose cars, to the Kenton, O., plant of International Railway Car Co.

San Manuel Copper Corp., 45 one-hundred-ton bottom dump hopper cars, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

Southern, 50 fifty-ton box cars, to Pullman-Standard Car Mfg. Co., Chicago.

Union Pacific, 1000 freight cars, to its own shops.

Wabash, 300 fifty-ton box cars, to General American Transportation Corp., Chicago.

RAILROAD CARS PENDING

Western Pacific, 435 freight cars, contemplated; list includes 370 box cars, 50 flat cars and 35 cabooses, with remaining types to be determined.

RAILS PLACED

Atlantic Coast Line, 35,500 tons, to the Tennessee Coal & Iron Division, U. S. Steel Corp., Birmingham, Ala.

SAVE ON RAILS



BUY "GUARANTEED RELAYERS"

Handle more cars better — spend less to install & maintain with Foster Relayers. "Open-stock" shipments, all sections 12# thru 175#. Switch Materials, Track items.

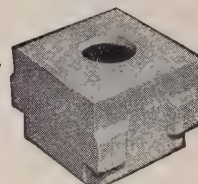
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CHICAGO 4 HOUSTON 2 LOS ANGELES 5

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Advertising Index

Acme Chain Corporation	5	Lamson & Sessions Co., The	120
Ajax Flexible Coupling Co., Inc.	119	Lavallee & Ide, Inc.	57
Allegheny Ludlum Steel Corporation	152	Link-Belt Co.	24
Allen Manufacturing Co., The	56	Logemann Brothers Co.	147
Allis-Chalmers	98, 99	Lovejoy Flexible Coupling Co.	142
Allis-Chalmers Manufacturing Co., The Buda Division	108	Lucas Machine Division, The New Britain Machine Co.	17, 18, 19, 20, 21
American Chain & Cable, American Chain Division	138	Luria Brothers & Co., Inc.	144
American Chemical Paint Co.	70	McKee, Arthur G., & Co.	89
American Roller Die Corporation	114	Manross, F. N., & Sons Co., Division of Associated Spring Corporation	13
American Steel & Wire Division, United States Steel Corporation	111	Master Electric Co., The Inside Back Cover	
American Zinc, Lead & Smelting Co.	125	Mesta Machine Co.	87
American Zinc Sales Co.	125	Midvale Co., The	4
Applied Research Laboratories	25	Milwaukee Division of Associated Spring Corporation	13
Armstrong-Blum Mfg. Co.	33	National Acme Co., The	12
Associated Spring Corporation	13	National Steel Corporation	50, 143
Avondale Marine Ways, Inc.	93	National Tube Division, United States Steel Corporation	111
Baker, J. E., Co., The	64	Nelson Stud Welding Division of Gregory Industries, Inc.	73
Baltimore & Ohio Railroad	2	New Britain Machine Co., The	17, 18, 19, 20, 21
Barnes-Gibson-Raymond, Division of Associated Spring Corporation	13	New Jersey Zinc Co., The	53
Barnes, Wallace, Co., Division of Associated Spring Corporation	13	Niagara Machine & Tool Works	14, 15
Barnes, Wallace, Co., The, Ltd., Division of Associated Spring Corporation	13	Nice Ball Bearing Co.	142
Bethlehem Steel Co.	1	Ohio Division of Associated Spring Corporation	13
B-G-R Cook Plant, Division of Associated Spring Corporation	13	Osborn Manufacturing Co., The	3
Blanchard Machine Co., The	76	Ottawa Steel Products, Inc.	150
Browning, Victor R., & Co., Inc.	142	Pacific Industrial Manufacturing Co.	112
Buda Division, The, Allis-Chalmers Manufacturing Co.	108	Pennsylvania Salt Manufacturing Co., Metal Processing Dept.	69
Buffalo Forge Co.	26	Pope Machinery Corporation	118
Bullard Co., The	104	Raymond Manufacturing Co., Division of Associated Spring Corporation	13
Burgess-Norton Mfg. Co.	106, 107	Republic Steel Corporation	90, 91
Buschman, E. W., Co., The	16	Revere Copper & Brass, Inc.	85
Carborundum Co., The	74, 75	Roebbling's, John A., Sons Corporation, Subsidiary of The Colorado Fuel & Iron Corporation	27
Cincinnati Milling Machine Co., The, Cincinnati Milling Products Division	123	Russell, Burdall & Ward Bolt & Nut Co.	54
Cincinnati Milling Machine Co., The, Process Machinery Division	45	Ryerson, Joseph T., & Son, Inc.	30
Cleveland Crane & Engineering Co., The	133	Sciaky Bros., Inc.	71
Cleveland Steel Tool Co., The	142	Seaboard Coil Spring Division of Associated Spring Corporation	13
Climax Molybdenum Co.	141	Simonds Saw & Steel Co.	46
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division	101	Standard Conveyor Co.	117
Columbia-Geneva Steel Division, United States Steel Corporation	111	Sterling Wheelbarrow Co.	145
Cowles Tool Co.	142	Stuart, D. A., Oil Co., Ltd.	8, 9
Crosby Co., The	137	Sun Oil Co., Industrial Products Department	58
Cross Co., The	61	Tennessee Coal & Iron Division, United States Steel Corporation	111
Denison Engineering Co., The	28	Thomas Flexible Coupling Co.	105
Dunbar Brothers Co., Division of Associated Spring Corporation	13	Timken Roller Bearing Co., The Back Cover	
Eastern Machine Screw Corporation, The	142	Torrington Co., The	96
Easton Car & Construction Co.	148	Union Wire Rope Corporation	29
Electric Steel Foundry Co.	68	United States Steel Corporation, Subsidiaries	111
Electro Manganese Corporation	150	United States Steel Export Co.	111
Enterprise Galvanizing Co.	142	United States Steel Supply Division, United States Steel Corporation	111
Eureka Fire Brick Works	150	Upson-Walton Co., The	151
Fischer Special Mfg. Co.	127	Ward Steel Co.	150
Foster, L. B., Co.	150	Washburn Wire Co.	22
Gibson, William D., Co., The, Division of Associated Spring Corporation	13	Washington Steel Corporation	148
Glazer Steel Corporation	149	Wean Equipment Corporation	94, 95
Globe Brick Co., The	115	Westinghouse Electric Corporation, Sturtevant Division	66, 67
Great Lakes Steel Corporation	50	Wheland Co., The	6
Gregory Industries, Inc., Nelson Stud Welding Division	73	Whiting Corporation	113
Grip Nut Co.	6	Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation	101
Hallden Machine Co., The	110	Yoder Co., The	116
Hanna Furnace Corporation, The	143	Youngstown Foundry & Machine Co., The	139
Heald Machine Co., The Inside Front Cover			
Heyl & Patterson, Inc.	7		
Hydopress, Inc.	23		
Industrial Brownhoist Corporation	134		
Inland Steel Co.	36		
Insul-Mastic Corporation of America	11		
International Nickel Co., Inc., The	34		
Iron & Steel Products, Inc.	149		
Kearney & Trecker Corporation	63		
Kewanee-Ross Corporation	72		
Keystone Steel & Wire Co.	10		

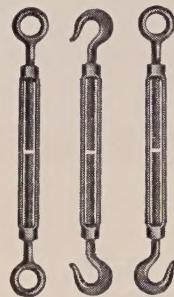
UPSON-WALTON

turnbuckles
you can
depend on

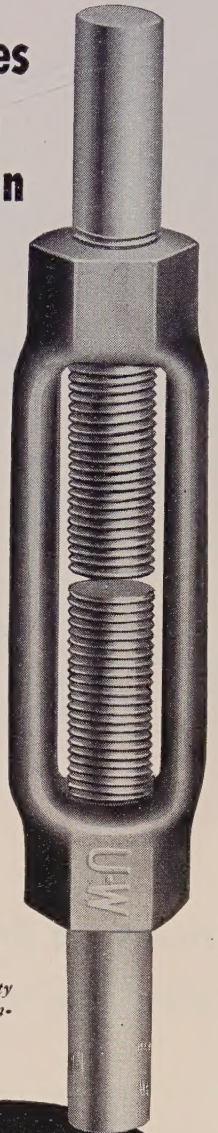
Weldless, hex-end bodies are drop forged from special bar quality forging steel.

Heads are drilled and tapped in perfect alignment, so that end fittings pull evenly.

Threading is American National Course series, class 2 fit, for easy assembly.



In the long run quality costs less. Specify Upson-Walton turnbuckles.



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New York • Chicago • Pittsburgh

MANUFACTURERS OF TACKLE BLOCKS,
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Table of Contents, Page 5

Classified Advertising, Page 149



This is the **PAYOFF...**
when you're carrying **PAYLOADS**

First cost doesn't mean much when you're talking about truck trailers or railroad coaches made of Allegheny Metal. In such uses, this time-tested stainless steel begins to pay you back right away. It's so strong that there's far less dead weight, and correspondingly more payload. It saves on maintenance—it saves on fuel . . . and *no other metal* can match stainless steel for ability to take a beating, laugh off corrosion and last almost infinitely in service.

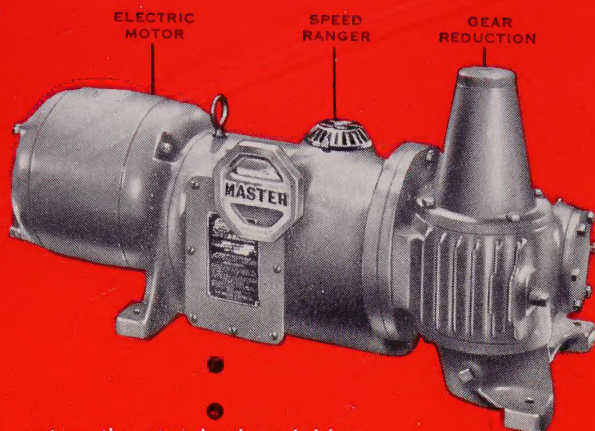
In fact, wherever you use it, stainless costs you less in the long run . . . pays you a profit. There's many an advantage waiting for you in Allegheny Metal—let us help you secure them. *Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.*

Make it **BETTER**—and **LONGER LASTING**—with
Allegheny Metal



W&D 5386 B

Warehouse stocks carried by all Ryerson steel plants

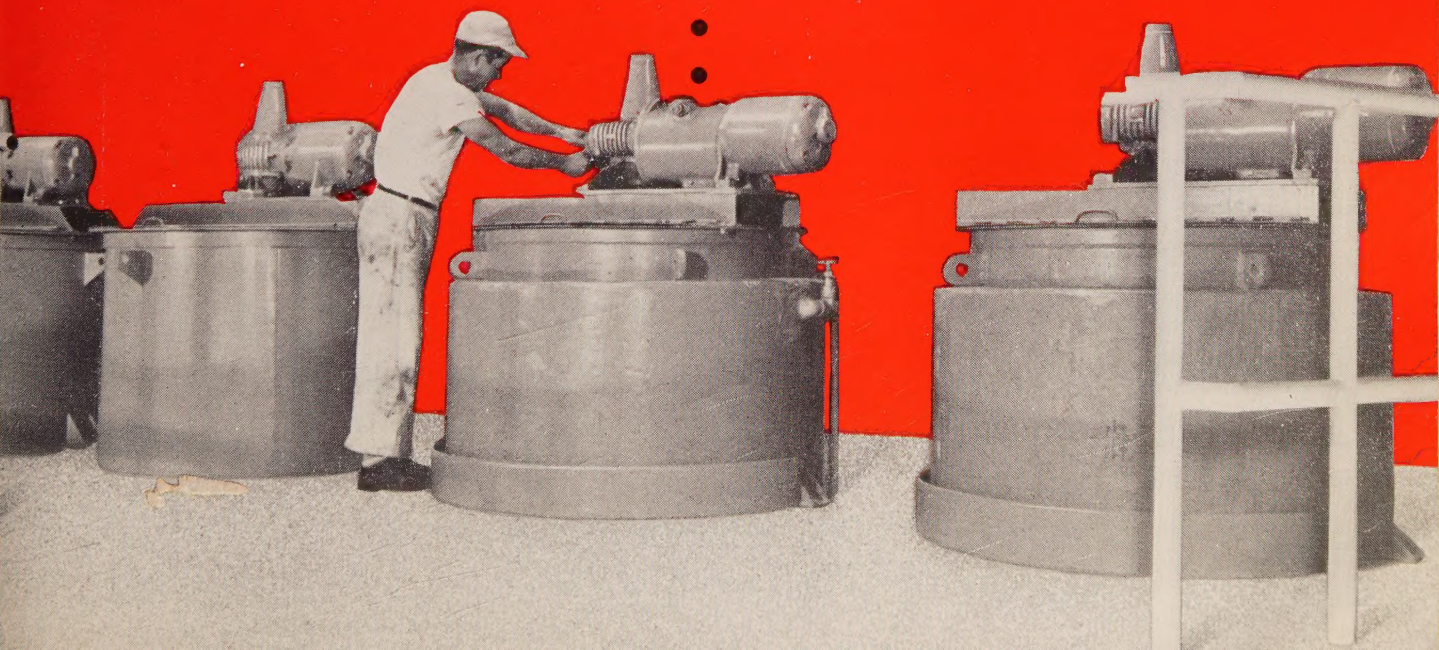


See how easily the standard electric motor, the standard variable speed unit and the standard gear reduction combine into a drive that gives the RIGHT horsepower, the RIGHT shaft speed, the RIGHT features . . . all in one compact unit. Nowhere else will you find power units that are so flexible, so easily adaptable, and in such a wide range of types and ratings.

Master power drives are available in thousands and thousands of ratings ($\frac{1}{8}$ to 400 HP) . . . in open, enclosed, splash proof, fan cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 430 to 1 ratio . . . with electric brakes . . . with fluid-drive . . . with mechanical or electronic variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best power drive for you.

**standard units
easily combine into
special purpose drives**

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



How TIMKEN® bearings as back-up rolls keep levellers from marking sheets

WITH Timken® bearings as back-up rolls, levellers flatten sheets without marking, give long, trouble-free performance. Because Timken bearings practically eliminate friction, they easily accelerate to top speeds. As a result, skidding and scuffing between work roll and back-up roll is reduced. This helps eliminate marking of the sheets. And because these bearings are both anti-friction bearings and back-up rolls, design is greatly simplified.

The OD of the outer race of each Timken bearing is the surface that contacts and supports the work roll.

Because of the extremely smooth surface finish of the OD of these bearings, the work rolls are not marked with the result that the sheets are also unmarked.

By keeping housings and shafts concentric, Timken bearings make closures more effective; lubricant is kept in, dirt kept out. As a result, maintenance is minimized.

Finally, Timken bearings are able to take the tremendous radial loads set up by this operation. Line contact between the rollers and races gives them the load carrying capacity to take these loads with ease. Tapered

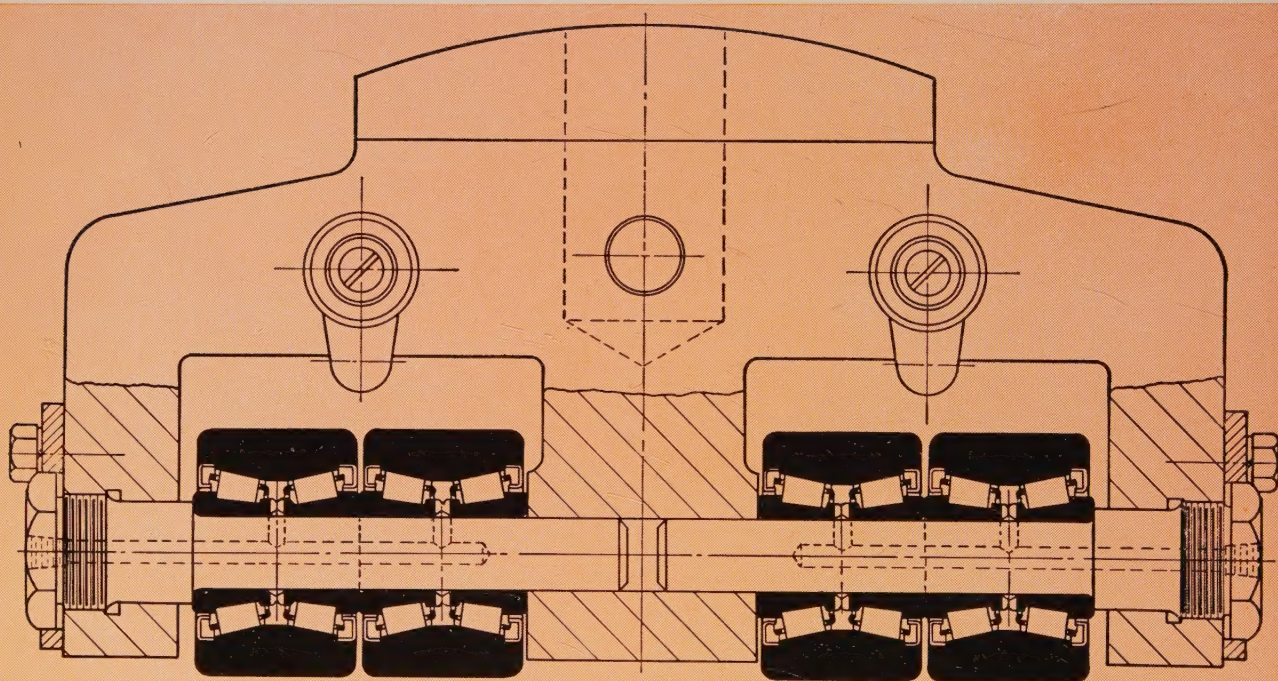
construction allows Timken bearings to carry both radial and thrust loads in any combination. Deflection and end-movement of shafts and rolls is eliminated.

Timken bearings are now used on practically all makes of levellers.

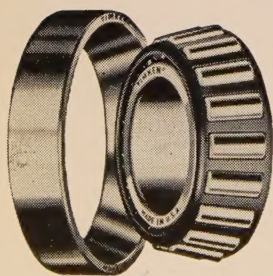
Always specify Timken bearings for the machines you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



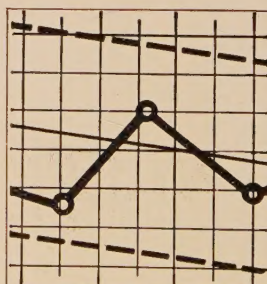
This symbol on a product means its bearings are the best.



Mounting diagram shows how Timken bearings are used as back-up rolls in levellers.



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TAPERED ROLLER BEARINGS



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To insure uniform high quality and closer tolerances, the Timken Company uses statistical quality control. With it, tolerance deviations are plotted graphically. It's one of industry's newest, most scientific methods of improving product uniformity.

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